

VOLUME I



FORMULATION and ECONOMIC APPRAISAL of DEVELOPMENT PROJECTS

LECTURES DELIVERED AT
THE ASIAN CENTRE ON AGRICULTURAL AND ALLIED PROJECTS
TRAINING INSTITUTE ON ECONOMIC APPRAISAL
OF DEVELOPMENT PROJECTS

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PREFACE

THIS Book contains the Lectures delivered at the "Asian Centre on Agricultural and Allied Projects," held in Lahore, Pakistan, from October 2nd to December 15th, 1950.*

The instructional work at the Centre was organized in the form of an initial orientation period of two weeks, then two semesters of about five weeks each. In both of these semesters there were three concurrent series of "Major Course" Lectures by experts provided by the various sponsoring organizations. In addition there were many Lectures on "Special Problems of Economic Development" dealing with particular technical subjects by experts made available by the sponsors as well as by experts from other countries and from the host country. The Book is divided into two volumes. Book I contains the Lectures on "Major Courses" and Book II comprises the Lectures on "Special Problems of Economic Development."

The participants took part in regular practical work (statistical and economic laboratory) to apply to actual data and to realistic development projects the principles which were being discussed in the Lectures. Trips to see selected projects in the field were also made, notably to the Rasul Project on the Jhelum River, a hydro-electric and water-logging control project, and the Thal Project, a combined resource development project between the Indus and Jhelum Rivers, involving irrigation, colonization, road construction,

*For the origin, sponsorship, operation, participation and costs of this Training Centre, sponsored jointly by the Government of Pakistan, the Food and Agriculture Organization of the United Nations, the International Bank for Reconstruction and Development and the United Nations (including the Economic Commission for Asia and the Far East, see "Report on the Asian Centre on Agricultural and Allied Projects, 1950".

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reforestation, construction of markets and market towns, and possibly also a hydro-electric plant. These two projects are referred to frequently in the material which follows, as data from them was used to illustrate the principles under discussion. In addition, the participants divided themselves into twelve groups, each of which prepared a report on a specific project of its own country. These projects included irrigation development, industrial development, provision of agricultural credit and various other types of schemes. The form and presentation of these projects were in accordance with the principles developed at the Centre.

An extensive library of reference materials on economic, agricultural, and development problems with particular reference to Asia was assembled for use at the Centre. This has been left in the possession of the Pakistan Government to be maintained as a working and reference library for the future use of students and research scholars from all parts of Asia.

The Lectures are presented here just as they were delivered, with only such condensation or revision as the lecturers themselves made in them, except in some cases for section headings inserted by the Editor. No attempt has been made to remove differences in opinion or in points of view between the different lecturers. Instead each lecturer is individually responsible for the material appearing under his name, which represents his own personal opinion, and should not be taken as representing the policies or views of the sponsoring organizations. No attempt has been made to rewrite these Lectures in the form of a closely-written textbook or professional articles: rather they are left in the form of colloquial, discursive discussion with many illustrations, characteristic of extemporaneous discussion and teachings. Questions raised at the Centre and the answers to them have been included where they seemed significant to the matter discussed in the Lectures.

This material has been recorded and reproduced in the hope that it will be useful as a reference or text-book for future international or national training centres or courses on development problems, and to college and other students and to government officials dealing with such problems. We trust that the use made of it will justify the cost and effort it has involved. We hope that eventually a publication may be prepared based on these and other materials which will provide a more concise text-book covering this field.

Credit is due to all the sponsoring organizations for their support of the Training Centre, and especially to the Pakistan Government for their gracious hospitality and the Punjab Government for printing this Book, to all the lecturers for the hard work involved in preparing their respective Lectures and to the participants of the Centre for their appreciative and stimulating co-operation. Appreciation is also due to Mr. Justice Muhammad Munir, Director of the Centre, for his helpful guidance and to the administrative and secretarial staff, particularly Miss Frances McAuley and Mr. Abdul Hakeem. Finally our grateful thanks are due to the Officers and Staff of the Punjab Government Printing Press for their valuable assistance and outstanding work which has made the publication of this Book possible.

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PART I
DEVELOPMENT PROJECTS AS PART OF NATIONAL
DEVELOPMENT PROGRAMMES

BY
DR. H. W. SINGER

DEVELOPMENT PROJECTS AS PART OF NATIONAL DEVELOPMENT PROGRAMMES

Introduction

This course, inevitably, is somewhat more general in the sense of dealing with more general relations affecting the economy as a whole. That is indeed the purpose of this course. On the other hand, I shall not assume previous advance knowledge of economics, except that type of simple economic common sense which you all have to apply, as technicians, as civil servants, as citizens. As you probably know I come to you from the staff of the United Nations Headquarters Organization. In the United Nations, our concern is not so much with agricultural projects particularly—that is done by the FAO. Our particular concern is with things which are not covered by any of the Specialised agencies. In practice, that means that our particular job is concerned with general economic policies, administration, industrial and land transport development. There is, of course, no clear line of division. Processing of food, crushing of oil, production of fertilisers and insecticides are instances of what may be considered with equal justification as belonging to the fields of industrial or agricultural developments. Most larger agricultural projects involve questions of land transport. Agricultural and general economic, fiscal and administrative policies are inextricably interwoven with one another. Hence it is fitting that a member of the staff of U N O itself should consider with you the problems of agricultural projects in their more general economic setting, in their relation to the economy as a whole.

I Basic Principles I : Principle of Accumulation

Let us now start upon the subject matter of this course. My starting point in this course centre is a basic twin principle. In order to understand the relation of individual projects within the national economy as a whole, we must get very firmly implanted in our minds two economic principles which are neglected only at the expense of a lack of understanding the problems of planning for economic development. These two principles, I shall call the principle of accumulation and the principle of inter-relation.

NATURE OF THE PRINCIPLE

The principle of accumulation indicates that in economic life, in economic planning, we are dealing with a world which is rather different from the mechanical world. In the mechanical world, you have relation of cause and effect between different factors. A causes B. This book is lying on this table and I push it along, it comes to rest again in a new position. The push is the cause of the movement of this book from here to there. Now many people, and especially people with mechanical training, tend to think of economic development in that particular way. A push—and you come to rest in a new position. That is fundamentally wrong. In economics, you have no cause and effect. What you have in economics is a movement of cumulation. If you do something, the position does not come to rest, but the movement goes on and something else happens. A causes B and B causes C and C causes D and in the end D causes a change in A again.

Economic development is a cumulative process of this kind. The secret of development planning is to set in motion such forces of cumulation. But before I go into that, let me give you a few examples to illustrate this principle in application to economic development.

Examples . Capital Formation

I have selected here five or six different examples which are especially important. First of all, we have an example of a cumulative process in the relations between capital formation and poverty. It is certainly true, although only partially true, that under developed countries are poor because of a lack of capital. One of the main methods by which economic development proceeds or takes place is by adding to the physical or non-physical capital of a country. The physical capital of a country consists of machines, buildings, land improvements, tools, etc., anything that is tangible and of some permanence—that lasts more than a year, shall we say. There is also a good deal of intangible capital in a developed country. In countries like the United States or England, shall we say, the greatest proportion of national capital does not consist of tangible things. It consists of intangible things of knowledge, of scientific tradition, of skill, of a scientific organization that is conducive to economic progress or economic development. For instance, supposing that in a country like the United States, as a result of war or earthquakes, or some catastrophe of that sort, all tangible capital were completely destroyed, machines, buildings, houses, dams, irrigation—everything destroyed. But assume at the same time that the people are kept alive, that the social organization is kept alive, that there is no breakdown in the government machine, in teaching, in knowledge. It would be a matter of a fairly short time for the United States to be back again where it was. But now assume the opposite case. Assume that for some reason all the physical capital were left intact, but that in some mysterious manner the intangible capital, scientific knowledge, scientific tradition, skill, education, etc., were suddenly wiped out or eliminated. That would be a much more serious matter than the destruction of physical capital. The best way to think of the capital of a developed country, which we were trying to build up in underdeveloped countries by the process of economic development, is as an iceberg. As you probably know, an iceberg has one-tenth of its area above water, that is visible. But nine tenths is submerged—we don't see it. But it exists all the same—in fact, it is most of the iceberg.

It can be very misleading simply to calculate the difference in the amount of physical capital in a country like England or the United States, and then to imagine, that all you have got to do is to build up a similar amount of physical capital per head in other countries in order to get the same standard of living. That does not follow. One direct application of this is that development planning which concentrates entirely on physical projects to the neglect of intangible capital, of high standards of education, of good health, of a scientific tradition, of research, etc., is not likely to be a good development programme. There is always a certain danger which shall illustrate later in this course, simply because the one thing is visible and tangible and the other is not, because education and scientific knowledge is something which is intangible, that people think what is not visible is not real. That

is a dangerous confusion. What is invisible can be a very real factor in economic development. The danger is that development programmes may concentrate too much on visible projects at the expense of the invisible.

As between poverty and capital formation, which is cause and which is effect? Where do we start with economic development? Do we start in remedying economic poverty, in providing for higher standards of living, or do we start in providing capital? Now obviously, if you follow what I said about cumulative forces—that question does not make sense. Neither of them is a cause of the other, or both are the causes of each other. There is no point in asking. “Where do we start in economic development?” The country is poor because it has no capital. It has no capital because it is poor. Both statements true. Therefore, as long as you try to ask these sort of questions about a basic cause of under-development you are moving in a logical circle. This may sound very elementary to you—I hope it does!—but, all the same, if you analyse the development plans of some countries, you will come across the notion that the important thing is to build up a market first, that before you have development, you must get a market for the commodities which you plan to produce. A domestic market for the commodities can be created by the incomes of the people producing the commodities. By adding to your production, you create additional real income which is the demand for the extra output that you produce. It does not make any sense to delay production of needed commodities for which there is no present market. If you do that you will not get development.

Examples · Lack of Service Provision

A second example may be drawn from the results of a United Nations study entitled “World Iron Ore Reserves and their Utilisation in Under-developed Countries”. The study shows, broadly, that the physical resource basis for a steel industry—in ore and coking coal—is present in many locations in under-developed countries. After computing the various distances and relative costs of transporting ores, coal and finished steel in the required quantities, we find that it should be possible to deliver finished steel from local furnaces in under-developed countries as cheaply or more cheaply than from the U. S. or Europe. Why does it not happen? What is wrong with this calculation?

The answer is that it is the cost of transport which matters, not the equivalent rail-ton-miles required. The results would only be the same if the efficiency of transport were everywhere the same, so that the ratio of cost equals the ratio of physical distance. That is not the case. The efficiency of transport in that sense is less in the under-developed countries than in the U. S. or Western Europe.

Now if you ask yourself why is the efficiency of transport not the same—well, the answer is because there is no highly developed net work of integrated transport facilities in the under-developed countries, as it exists in the United States and England, those integrated net works of railways, of canals, of river navigation, harbour facilities, loading facilities, unloading facilities, cranes, etc. The next question to ask is “why not?” Well, the answer is

that the development of an effective transport system is part of the general process of economic development. If you follow this process of thought, we come to the conclusion that the difficulties of having economical iron and steel production in under-developed countries, is their lack of economic development, but the reason for their lack of economic development is largely due to the fact that they have no such strategic industries as an iron and steel industry. We cannot say that one is the cause of the other. They are both cause and effect. Similar conclusions are obtained in studies of processing of agricultural products. There it is found, very largely, that the absence of processing facilities for agricultural products (oil crushing plants are an illustration) can be attributed to the fact that the big market for oil products of a highly varied kind is in the United States and Western Europe, and hence these areas also tend to attract the processing and manufacturing facilities. Again, the relation is circular rather than cause and effect.

Examples Relationship of agriculture and industry

My next example concerns the relation between agricultural and industrial development. These two sectors of economic life are often discussed as being in some sort of competition with each other as if the problem were either to develop agriculture or develop industry. I shall have more to say about what I shall call the unreal distinction between agricultural development or industrial development. What I am concerned to show at this moment is the same cumulative relationship between them.

Take agriculture. What does it mean for industrial development? If you think of industrial development, in a country which has a highly developed and efficient agricultural sector, it means industrial raw materials at a low real cost, since agriculture and mining provide the raw materials for industry. It means good and cheap food. A high level of food production means better health for industrial workers, and therefore it means greater labour efficiency, which is conducive to efficient production. Efficient agriculture means a good market for industrial products—not in the sense of need but in the sense of effective demand of buying power based on production in a efficient farming population which sells a considerable surplus over and above its own needs. You see the opposite to this statement illustrated by the difficulties of getting away from a state of subsistence agriculture. You can say, if we only had industrial consumption goods, providing an incentive for farmers to produce a cash crop surplus and sell, then we could have better agriculture and we could introduce technical improvements. But it is equally true that until we get more food and agricultural surpluses in the town, we cannot produce industrial consumption goods, to build up our industry we must have enough surplus food to feed the workers. Again we have the same relation to both factors being cause and effect to each other. This greatly complicates the problem of where to start, with producing the food surplus or industrial goods. In what conditions does it seem preferable, and easier to work from the agricultural end, and under what conditions is it easier to make a start at the industrial end?

The situation that we now have in many countries is that industries cannot be built up because there is no foreign exchange available for import of raw material and machinery. The reason for that is very often the low state of agricultural production. There again you see that the two are not competitive, how they go together.

Let us now take the opposite case and see how an efficient industry may be considered a pre-condition for agricultural development. Industrial development can provide agriculture with the tools, equipment, power that it needs, with fertilizers, pesticides and insecticides. I mentioned the incentive goods (as they are called) for farmers. Industry provides farmers with incentives to increase output because it provides a large range of desirable things that farmers want to buy. The only way to buy them, is to earn money, by producing above their needs and selling the surplus. It can be of immense importance for agricultural producers to have their products processed in the country, instead of having to export them. This is closely linked with that problem of agricultural prices. In a country where there is a developed industry, in which it uses its own agricultural output, food or raw material, it will be very much easier to give farmers fixed prices. If you export food and raw materials, no action of your own government can possibly insulate the economic system of a country as a whole from the effect of changing agricultural prices. As you know, one of the great problems of agriculture is the instability of agricultural prices which introduces a great deal of uncertainty, and is a considerable handicap in development planning.

It is true that even if you do not process your own agricultural products, you can always protect your farmers against the effect of these changing prices. You can always compensate your farmers, by direct subsidies, for instance, if their prices fall. But you cannot protect the community as a whole. If the prices of agricultural products abroad are low, no internal adjustment that you can make to protect your farmers will protect the community as a whole. Your farmers can only be protected at the sacrifice of some other group.

If you process your own agricultural commodities, however, the situation is quite different. In that case the agricultural prices are a matter of complete indifference to the community as a whole. If agricultural prices are low, your farmers will suffer, but on the other hand your processing industries will benefit, these two things will always cancel out. If you wish to do this, and have the machinery to do it, you can always compensate your farmer and yet leave your processing industries exactly as they were before. If the agricultural prices are very high, your farmers will be prosperous and the industries will be depressed and you can again redistribute the gains from high prices by internal measures. In other words, it will become much easier to go in for deliberate development planning and offer fixed steady prices to your farmers and your industries. Again you have another example that, in the real sense, they are not competitors but are helpful to each other—it is a cumulative relation and not a competitive relation.

Examples Combined River Valley Schemes

Finally let me just give you two further brief illustrations of this cumulative principle so that in future we can take it for granted and go on to apply

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it to development projects. The first relates to the combined river valley development, the T. V. A. type of development where a whole river valley is considered and water resources are used not only for one single purpose, like irrigation or navigation or power or flood control or any other possible single purpose, but are all combined. The relations that exist between these purposes of a combined river development scheme, are in that mutually cumulative relation. If you have power development, you can have pumps and you can have your irrigation. The power development supports your irrigation. Similarly, as you can easily work out for yourself, irrigation supports your power development, everything supports each other, and that can be applied to economic development in general.

Examples . International Cumulation

Finally, a word about the international aspect. You have a cumulative relation in the international sense, too. There is no competition between the development of one country and the development of another country. If one country that is now under-developed, develops and industrialises—we shall assume now that the development is based on the use of domestic food and raw material—it is quite evident, that the development of one under-developed country. A provides an opportunity for the development for some other country B. The export demand which is now no longer satisfied by country A will fall to B. B will be able to export more, obtain more, foreign exchange and import more machinery and more raw materials, or import better seeds or agricultural implements. Thus, you have a cumulative relation not only within the development programme in each country but also between the development programmes in different countries. The successful implementation of the development programme of one country will be of assistance to other under-developed countries in their development programme.

II Basic Principles 2 : The Principle of Interrelation.

I shall now leave for the moment this principle of cumulation which we discussed but only to come back to it very soon again. For the moment, I want to approach the problem of economic development programmes from a different angle.

THE NEED FOR A DEVELOPMENT PROGRAMME

Let us ask ourselves, what does a development programme contain? What should it contain? How can it be drawn up and what is the place of the individual project within the programme?

Now for that purpose, it is important to have a number of sub-divisions and definitions ready in mind. One such sub-division which is very important, I have put on this blackboard before you. This sub-division between 'service' or 'overhead' projects on the one hand, and directly productive

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projects on the other hand, contains in itself the starting point for many of the difficulties of planning for economic development. In more highly developed countries, there may be no need for a systematic development programme, because development may proceed automatically. The more highly developed countries have reached a stage where the principle of cumulation as discussed yesterday, is really at work, where investment proceeds almost automatically all along the line. Such countries may still decide to have a programme for other reasons—for reasons of social justice, for reasons of efficiency, or for reasons of political philosophy. They may be believers in planning, and therefore have a conscious development plan, but the point is that in the more highly developed countries, development does not depend on the programme or plan. In under-developed countries, we are faced with a different situation. There the situation is not to let the cumulative process do its work; the situation there is to arrive at the situation where the cumulative processes can begin to work. To get countries to the stage where cumulative processes begin to work, development planning is important because there is no automatic mechanism that brings the country to the stage where the cumulative processes begin to work. It is very similar to the engine of a motor car—once it starts, it goes on running by itself, but to make it start, you have to do something deliberate—you have to start it by handle, or you have got to press a button.

OVER HEAD PROJECTS AND DIRECTLY PRODUCTIVE PROJECTS

Well, I take it now for granted that we need not discuss the necessity of development programming and can now consider its relation to those two different types of projects, which we have defined as overhead projects on the one hand and directly productive projects on the other hand.

Any economic system requires a certain number of installations or capital formation which is not itself directly productive, which is in the nature of an overhead cost. I think many of you will know what the term overhead cost comprises in private business. Overhead cost means cost that has to be incurred whether the business is running or not. For instance, at least in the immediate period the cost of installed machinery in an industrial firm is an overhead cost, because you have got to go on paying for it whether you produce or not. Very similarly, you can apply that term to an economic system—there are certain overhead installations which must be present to enable production to take place, but which do not themselves directly result in the production of usable goods. Now the most important overhead items in any economy are a good educational system, health services, housing, transport power, irrigation—all those things taken by themselves do not produce anything that can be consumed.

Now here we have one of the great problems in beginning to draw up a development plan. What should be the proportion of overhead facilities that have to be constructed in relation to the directly productive projects? For instance, if you plan a certain increase in industrial output, you want to produce a certain quantity of steel shall we say, or cement or processed food, whatever it may be, now there is a need of directly productive facilities

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which is fairly easy to define—that is to say if you get good technical advice, good technical knowledge and good technical data, it is comparatively easy to get information on the best type of a steel making equipment, that is suitable for the particular job that you want to get done. That is comparatively easy, but the difficulty arises with the overhead projects. Is the present transportation system of the country suitable for producing and distributing this particular thing? Take an agricultural project. You want to develop a certain area for groundnut oil production. Is there sufficient transport available to bring in the necessary tractors or the necessary rooters or bulldozers where you want development to take place? Are there enough facilities available to handle the nuts when they are ready for shipment? Are there housing facilities available for housing the workers whom you expect to work on this particular project? That is an illustration of what I now call the basic or overhead project. Here you have the first difficulty with which you are faced in drawing up development programmes.

EXPENSE OF OVERHEAD PROJECTS

The general situation with which you are nearly always being faced in under-developed countries is that your basic services, your overhead services are not sufficient for this particular project, or for a longer range plan of increasing output. On the other hand, if you start developing those basic services in relation to that particular project that you have in mind, it certainly tends to make your project very much more expensive because these basic services have some very awkward characteristics. They are not directly productive and therefore you may go in for a very long time without getting any direct return. It lengthens the time until you get the fruits of your development project very considerably, if you have to go in for improving your basic services first. If you have to start building a harbour first and improving port installations, building a railway, building a road, providing repair and service facilities for the machinery that you are going to use, providing housing for the workers that you are going to hire, or the farmers that you are going to introduce in your area of development, it makes the time period required very much longer, since the time period of the directly productive part of the project may also be very considerable.

You have got to consider the question of time. How long am I able and willing to wait? If you go in for these projects, it is not possible to expect immediate results, in the sense of an increase in the output of consumable goods or of goods that can be put back into development in the immediate future. That is the trouble with these projects. On the other hand, for that reason you may decide, "Well, let us go slow on these service projects, it is certainly true that the facilities are not very suitable, they may not be the right kind, they may not be rightly located in relation to my development project, but may be I can manage it. There is a certain railroad there, it may not have the right terminus or it may not be able to stand sufficient traffic of development, the rolling stock may be very old, the engines may need repairs, but it may do, I can start with my project using what I have got".

DANGERS OF ECONOMISING IN BASIC SERVICES

Well in that way, it is nearly always possible to economise. It will generally be possible to make the cost of your direct projects a great deal cheaper. The initial capital cost may be a great deal cheaper and above all, you may be able to shorten the period of time, until you get results in that way. It may be possible to get results in three or four years' time, instead of ten or twelve or fourteen years' time. On the other hand, there are two great troubles, on the basis of past experience, arising in such cases. First of all, your project may be incapable of expanding later on. That means to say, the arrangements that you make now, using an obsolete harbour, with obsolete equipment, not properly dredged shall we say, without proper railroads—well you may be able to handle your first two or three years, while the project is building up, in that way, but when the project is completed or when it is expanding after completion, it may turn out to be uneconomic, in the sense that your current cost of keeping your project going may be very much higher than it need be. That is the first drawback if you utilize the basic services which you have got, however, imperfect they may be, and of that no doubt there are examples in your mind.

The second trouble with this 'make-do' approach is that if you improve your basic equipment, you not only improve the efficiency of your directly productive project, you also create the preconditions for some other project. In drawing up your development programme, one of the most important points, clearly, is to have in mind, not only 'What am I doing at this moment?' but 'What is the next step?' For instance, you may have an agricultural development project in a certain area. You may be convinced that your basic services are sufficient to cope with the increased output that you think you will get from your project. But the thing will not stop there—At least you hope the thing will not stop there. As a matter of fact, if the thing stops there, you might think your development has been a failure. If you remember what we said yesterday, about the principle of cumulation as I called it, the point about development is to carry on. Not to get somewhere and then stop there, but to carry on.

Now, of course, the subsequent development which you get may not be in the same region—it may utilize different kinds of basic services. That is a possibility but I think the normal case is that there will be subsequent development in the same region, the same area. If your first project has been successful you may have industrial or processing plants in the same region. You may get industries attracted to that area by its increased purchasing power, you may have towns springing up in that region which have a demand for water services, for gas, for electricity, for public utilities of all kinds. The danger in trying to speed up the moment that you get results from your first development project, by cutting down expenditure on your basic projects, is that you may be alright for a time, but later on you may be in trouble, and quite often, it may be too late then later on to start laying down the right kind of basic services.

That is another point to consider. In development planning, you cannot always say, "Oh, I'll have some improvised services laid down now, and they'll do for the next ten years; in ten years time, if or when they prove to be insufficient—well, then I'll add to them and improve them." Well, that

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sounds an easy and commonsense approach, and quite often it is a possible approach. But you have always got to be very careful not to assume that it will be possible to do it that way when, in fact, it may not be possible. For instance, once you have laid out your services in a certain way, once shall we say, enlarged a certain port, or created certain port facilities, built a railway to a certain place—even if at a later stage, it would prove to be much better, to have a different port or a different kind of transportation, and a different kind of railway, it may be very difficult to undo what you have done at first. It is one thing to start something and it is another thing to scrap it again. You cannot always assume that you will be able to improve on what you are doing now. In such cases where a project is very big and might require new basic services, it is always essential to think ahead, in longer terms. Now you will ask me “what has economic calculation to contribute to cases of this sort? What can I do to work out whether it is economically better to economize expenditure now and use what I have got and get my results in quickly, but possibly having trouble at a later period, as against the alternative procedure, which is to be very patient, to start dredging a port and providing for handling equipment, developing a town and building railroads, and not expecting any immediate return perhaps for another ten, twelve or fourteen years?”

THE NEED FOR JUDGMENT

Well, we shall consider that question in more detail at a later stage—there are certain answers to this kind of important question that emerge from a cost and benefit analysis in relation to the economic system as a whole. But one point that I want to make now at the beginning is that fundamentally, this is not a question of calculation. You cannot hope to sit down with a pencil and a sheet of paper and come out with an answer to this kind of question. This kind of question is a matter, strictly speaking, on which the technician, who works out projects as well as the economist, must submit to the views of the politicians. It is a matter of political judgment. Whether it is better to get results in three years' time and to have trouble in ten years' time and deal with it then as it comes, or else to forsee all these difficulties, to be very patient now, to spend a lot of money now without return, but be reasonably certain that we have built to last, a project that will develop and not give any trouble in later years—well, fundamentally, that question is a question of political judgment. Is the population of that country willing, or is the government of that country willing to wait? Are they strong enough, if you like, to tell their people, “these things are necessary, but for a long time you must not expect any returns from this.” “It is better to do it that way because in the long run we will build on better foundations if we do it that way, but you must not expect any early returns?”

The technician and economist has a great deal to contribute to answering that question, they will have to supply the politicians with the materials needed for answering these questions. I would even go a little farther than that. Quite often—if you take the actual situation as you find it in many underdeveloped countries and in many developed countries—you will not get any clear direction in that connection at all. You will not

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be told that you should lay out the project on those alternative lines, either three years or five years for quick returns, or ten and fifteen years and safely founded. You will not be told that. Quite often the situation is that if you produce too many alternatives for the people in charge to make up their minds about, they will suspect (although quite wrongly) that your planning is wrong because you do not come up with one single set of definite figures, definite time periods, definite suggestions. The mature politician, the mature minister, the mature government will appreciate the working out of different alternatives because that is the scientific approach to development planning.

Political judgment, in the light of all the available evidence, that is the way it should be done, but in practice, the number of alternatives will have to be limited. There is always a limit, first of all physically, to what one can do in preparing plans and also there is a limit to what it is wise to do in certain conditions. My proposition was not that the economist and technician should fade out of the picture, that they should withdraw completely when a decision of that kind has to be made. He has got to supply the raw materials on which the answer can be based, but he cannot make that decision himself ultimately. If a technician or economist makes that kind of decision, he is not acting as a technician or economist, he is making a judgment, a political judgment. He says he can afford to wait for twelve or fifteen years. He may be in a better position to make that judgment than a politician because he may know the available resources better, he may know the importance of advance planning, of related services better than a politician who may be too impatient to get immediate results because his electoral prospects may depend on it. The technician may be better qualified to make that judgment, but it is still true to say, that if he makes that judgment, that is not economic planning, that is not the preparation and appraisal of a Project, that is a judgment. You cannot support this kind of judgment on purely scientific grounds. It is not the result of pencil and paper work.

PROVISION OF GENERAL SERVICES AS PRIVATE INVESTMENT JOINTLY WITH DIRECTLY PRODUCTIVE PROJECTS.

Now let us return to our question of the relation of overhead projects to directly productive projects. I am now giving you an illustration not of a public project, but of a private development project. So far, we have only been talking about public projects and public programmes, quite naturally that is our main interest, but we should always remember that in practically all countries that are represented here, a good deal of economic development takes place under private direction and private auspices. You must never forget about private development, and, in fact the relationship between public development projects and private development, is, in a sense, the most important thing that determines the efficiency and the quality of a development programme. In many countries, whether a development programme is good or bad, depends more on whether the public development projects are properly integrated with the private development that is taking place, or expected to take place, than on any other single factor.

Now take a case of private development. A private firm wants to set up a factory. This private firm may need a lot of electric power as many

industries do. Now supposing that the public power facilities, which are part of the overhead equipment of an economic system, are in sufficient. The obvious solution for a private firm would be to set up its own private plant. That of course is not a very desirable solution; it has a number of drawbacks. It may look like a very convenient arrangement to save public money. When you have a private firm which comes along and says "We don't want any public power facilities, we are willing to set up our own private plant" your initial instinct might be to say "That's fine—it saves public money." But let us look at this proposition from the point of view of the economy as a whole. It may be very wrong, very irrational to allow private industrialists to set up their own private power plants even though they are willing to do so.

I want to point out that before accepting such a scheme whereby the owners of the directly productive projects undertake their own overhead projects providing their own roads, transport, power, water supply, etc., there are a number of points that you should bear in mind. I shall list seven points which are arguments against permitting a private firm to proceed in this manner which you should consider before making up your mind. We shall then discuss situations where this arrangement may be accepted.

(a) Disadvantages—

(1) The private firm setting up its own generating plant, as in my particular example, will still use exactly the same resources that the public authorities would have to use. That is to say, there is a saving to the public authorities in the financial sense, but there is no saving to the community as a whole in the real sense. The community as a whole will still need exactly the same resources of labour, material, equipment, foreign exchange in so far as equipment has to be imported, etc.

(2) The second point which I think is also of great importance to underdeveloped countries, is that if you expect those directly productive projects like factories, to provide their own servicing, you greatly increase the cost of industrial activity. You see, a firm which starts production and draws its electricity from an existing network of public utilities, has got no initial capital outlay—it pays for its power as it goes along, as a consumer of power. If you expect firms, or force firms, through the absence of public services, to pay their own installations of this kind, you add very greatly to the initial capital cost, and therefore to the risk of industrial enterprise in your country. Now, in nearly all cases, that will be a very undesirable thing to do, one of the problems of underdeveloped countries is that the risk of operation already tends to be greater than it is in highly developed countries. New enterprise is either absent or thinly represented. Often the people who have the money who might start factories, prefer to play safe, to buy land or to buy gold, or to take their money abroad. Therefore, any arrangement of the kind which we here discuss, which directly adds to this tendency, to this unwillingness, to this shyness of domestic investment, is evidently a bad thing.

(3) My third point is, that if you have public power service development, you have conditions of fairly fair and free competition between different factories. Generally speaking, electricity will be supplied on identical

terms to different factories, producing the same thing and using electricity. But if private firms are expected or allowed to set up their own power-houses, you create a condition that is favourable to monopoly. One firm may have the money to do it, they may have the liquid resources to build their own private station and therefore they can go into operation. But another firm may not have the money; and it does not follow that the firm which you shut out from production, because it has not got the money to build its own private station, is any less efficient than the first firm. The first firm may be an old-established concern which has accumulated reserves over the last twenty, or fifty, or hundred years, or the people who are behind it may be very wealthy individuals, with large land holdings, or other holdings, and they can afford the money. But the people who may be able to conduct production most efficiently, may be people without money to begin with. To penalise this second group of people by expecting them to incur the initial capital cost of the services which they need in addition to the current cost of production, may be a very unwise thing to do. It may cost you dearly in terms of lost development opportunities.

(4) A fourth item which has to be considered is that the private provision of services may compete with your public services programme for scarce materials or for scarce services or for foreign exchange. As you will know, quite apart from the shortage of foreign exchange, it was very difficult to obtain generating machinery, then it became a little easier, but now, it is again almost as difficult as it ever was after the war to obtain machinery. Therefore, you must always consider if you permit private service development of this kind, whether that does not retard your public service programme, whether it is possible to add up the two. Sometimes it is possible to add them up, but quite often you will find that by having individual factories build their own power-houses, you retard the progress of your public electrification programme.

(5) Fifthly, the generation of electric power is one of those activities, that are subject to the law of increasing returns. Generally speaking, it is more efficiently done if it is done on a large scale. Now if you split up your provision of power into many small-scale plants, each factory making its own electricity, and trying not to generate any more than they need for themselves, well then, you may get inefficient production. Your real cost of power production in the country is likely to be higher than if you had a well developed public service system, that may be true, both in the real sense and in the financial sense. In the real sense, your cost of production may be increased by inefficient provision of power and that means that your national income will be less than it could be, that again means that the surplus from your national income, which you can spare for economic development, will also be less, and thus your whole development will be slowed down. It is also the case, that if your industries produce at a high real cost of production, you are more sensitive to foreign competition. Your foreign competitors may produce at a lower cost of production and when you have built your factories, you may find you cannot operate them efficiently against foreign competition. Then you are faced again with difficult choices, either to close down your factories, wasting all the money that went into development of that particular kind, or else to protect them by a high tariff, which

may again adversely react against your exports, if you shut off the imports of other countries, other countries may retaliate, and may put a tariff against your exports. In that case, your export proceeds may be reduced and your development may be slowed down in that way. You will have less foreign exchange to import machinery. Inefficient production on the part of the directly productive projects, as the result of absence of good overhead provision, is a very serious matter. In the financial sense, if these firms make a lower profit than they could make because their cost of providing their own power is high, their taxpaying capacity will be lower, industrial profits are one of the main sources from which new development is being financed, either directly, if these profits are ploughed back into the business for expansion, or alternatively, the profits may be taxed and the Government may use the proceeds to finance public development projects. However, if the profits are reduced as the result of absence of public services for these directly productive projects, all these possibilities of keeping development going and of making it a cumulative process will be that much reduced.

(6) A sixth point is also important. If each factory provides its own electricity, as in our illustration, you cannot have a properly balanced power load in your electricity system. One of the great advantages in operating a balanced and interrelated power system is that you can distribute the load, shall we say, between residential use by private persons and industrial use. Industrial use very often is during the hours when residential use is low and in that case, if you have an electricity plant which caters both for residential use and industrial use you can spread out your consumption much more easily and lower your cost and increase revenue from your electricity plant. But if industries provide their own electricity, you may be left with residential use only, and the public power projects that you set up will be inefficient for that reason. That is to say, the provision of a private project of this kind may react unfavourably on the efficiency of your public service system.

(7) Finally, there is a seventh objection to consider. The tendency for factories to have to generate their own electricity because there is no proper public service system also may lead to inefficient dispersal of industries and factories. You see, if each factory had its own power house the factories tend to be widely dispersed over the country, but if you have a public service system industry tends to be attracted to those areas, to those locations where the power is provided—the availability of cheap and dependable power is one of the great attractions for industry. If you can properly group your industries around your power system, you may achieve very considerable economics from this industrial grouping. If you permit, or encourage, your factories to provide their own electricity, you cannot get these advantages. You may have a factory in this corner—another factory in that corner, and it may become difficult and expensive later on to integrate these isolated factories into an industrial area.

Well, here are seven points which illustrate the kind of objection to this particular arrangement. I do not claim that my list is complete. Possibly, there are other points that are in your mind.

(b) *Advantages—*

However, before, you rush to the conclusion that such private provision is always bad, and that overhead services and directly productive enterprise should always be clearly separated, let me give you some illustrations of conditions where it may be perfectly justifiable

(1) In the first place, the seven points which I gave you now may not apply in all conditions. Take for instance the sixth point, namely, that in laying out a network of electric power in a country, one has to be very careful about the balance between residential use and industrial use, in order to obtain the economics achieved by combining electric supplies for different kinds of uses. Now that need not always be an objection to private generation. That is a matter for investigation and research in each particular case. It may be that your public service system is balanced as it is and that the industrial demand which comes from new factories may completely upset the existing system. Instead of providing some balance, it may destroy the balance which you have got. It may be that, at this present moment, you are engaged in a number of other development projects of a high degree of priority so that it would be wasteful at this particular moment to set up additional public capacity, simply and solely in order to cater for this industrial use. In such conditions, it is perfectly possible that you may decide, when you look at this problem in relation to the economy as a whole that the right thing to do in the circumstances is to let the factory, or the private firm, in the directly productive field go ahead, if they are willing to put their money into their own electric power supply. If they reduce the burden on the public system and if they create better balance in the public system, it may be a very desirable thing to do.

(2) Take a second case. Supposing the firm with which you are dealing is a foreign firm, as may happen quite often. Supposing it is a branch factory of a foreign enterprise and supposing they have got the foreign exchange to import machinery. You have not got it. The Government may be very short of foreign exchange. But this firm says "We have no foreign exchange problem, our H O in New York, or London, or whatever the case may be, will give us the foreign exchange for buying machinery." Well, in that case, the alternative to this development of private generating stations may be no power at all. You may not be able to substitute a public service system for the private system. In that case, it might be very wrong to say "We don't want this private service system, because a public system is better." If you cannot have a public system for lack of foreign exchange, but if you can have a private system, and if the factory that is to be based on this power supply is important to your economy, I think it would be generally wrong to say "We will not permit you to have this private station."

(3) Let me take a third case, as an illustration. This case is also quite important, something that happens quite often in a number of under-developed countries. I said before, among my seven points, that often it will be better to tax a private factory, to take the money from them which they propose to put into this private electricity station and use the money as a contribution to your general public development programme instead. But what if you cannot utilise those resources, by taxing the firm? Or if in

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that case you run the risk that the firm may be discouraged, and will say " we will close down, if you tax us too highly ? " Or if you cannot borrow the money from them, for lack of market for borrowing ? In many countries, it is not easy for a Government to borrow money. In some countries, there has been a condition of inflation, shall we say, for the past 20 or 30 years which has destroyed confidence in Government bonds. In other words, it is not always true that you could utilise the resources which a private firm has in order to add to your own public service system. It may be that if you do not allow a private firm to use its capital or use its profits in creating its own power supply, that money may be distributed as dividends. Your fiscal system may also be of the wrong sort, it may not be able to catch these profits for your development programme. The result may be that they will pay higher dividends, it may be that the shareholders are abroad and therefore the income would be distributed abroad out of the country. That would create balance of payment difficulties for you, it may mean that you would have to export and with the proceeds instead of adding to your development programme, you will have to find the money to pay the owners of this firm, who may be located abroad.

NEED FOR CONTINUOUS ECONOMIC ANALYSIS

You see how before you make a decision on such a point, you have got to go into the circumstances of the case. I want to emphasize very strongly that there is hardly any development problem which can be treated as a purely technical problem. Here we had a problem of the kind that looked purely technical—Private Electricity *versus* Public Service, but when you go into it, you have to take into account matters which relate to the economy as a whole. What are the alternative uses of these profits, which the firm intends to put into power supply ? What are the alternative possibilities of your own Government to extend the public service system ? The point that I want to make is that unless you decide a case of that sort in the light of all the circumstances, unless you have a picture in your own mind of your economy as a whole, of its present situation, of what you are driving at, you cannot answer even a technical question of that kind in an intelligent way, in the right way.

III Relations of Public and Private Projects

The question has been raised whether it does not follow from what I have said that everything should be nationalised, overhead services as well as directly productive enterprises in order to secure proper integration between the two. Well, that does not follow at all. These overhead services that I have been talking about, will be very largely public services, in the nature of things, but we have certain kinds of overhead projects where you may have private enterprise. Power is an example. In some countries, the provision of the " public " i.e., general power system is left in private hands.

What my argument does tend to show is that the activities of any private groups which operate in the provision of basic services should be

controlled in the public interest. It is not necessary that they should be publicly owned. My argument is that in integrated development programmes, in so far as basic services are not public services, they should be conducted in such a way as to fit in with the public development programme. That can be done by giving these private firms which undertake these public service developments either inducement to do the right thing, or, alternatively, by controlling them—one of the two. I also want to point out that in general, private firms at this time are very reluctant to engage in this kind of public service activity. Up to 1914, it was very frequent—foreign private enterprise operated railways, tramways and electricity, gas, water supplies in underdeveloped countries. But at this present time, there is no inclination on the part of private investors, to go in for these projects. First of all, a private firm which undertakes to run a public utility in an underdeveloped country, is always in a very vulnerable position. These are not the projects on which you can make quick profit. They are very slow yielding projects. Their productivity is nearly always indirect. The rate at which they can sell their services, electricity rate, water rate, railway rates are nearly always controlled. There is hardly any Government which would permit a private railway company, or a private gas company to fix any price it likes, because the price of power or rail transport is much too important as a datum in the economic development programme of a country. For all these reasons, because of the large capital cost required, the slow yield, the vulnerability, the fact that prices are nearly always controlled, there is, at this present moment, little inclination on the part of private enterprise, either domestic or foreign, to go into underdeveloped countries and undertake on a large scale the provision of these public services. Therefore that particular problem whether they should be private or public enterprise, is largely academic.

But I would certainly not say that it follows from what I have said, that the directly productive project must be a public project. I can't see how that follows at all. The great problem in development planning is co-ordination between the public sector and the private sector. What we call development programmes, in the great majority of all cases, are public service programmes. There are very few Governments at this present stage, among those which have private enterprise, which include in their development programmes the activities of private firms. Yet, as I shall explain, the economic efficiency of a development programme depends on the fact whether the activities of private units and the public service programme part of the development programme are properly interrelated—whether they fit together or not.

INDUCEMENTS AND CONTROLS

Now one method of doing it, but only one method of several, is nationalization. If you nationalise your private firms, then they will be included in your public programme and there is no direct clash between the two. But I should certainly not say that it follows logically from what I have

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said so far, that these projects must be nationalized, or should be nationalized. There are other methods of co-ordination apart from nationalization. I mentioned already the method of inducement. A Government which uses the fiscal instrument cleverly and in a consistent manner, can often induce private people to do what the Government want them to do. For instance, you may, "If you set up a factory of this particular kind, in this particular area, we will provide you with cheap water, cheap gas, or cheap electricity, we will train your workers for you, will exempt you from profit tax for the next five years, we will give you Government contracts, we will protect you against foreign competition," etc. The Government has many such measures at its disposal. On the other hand, the Government can say, "If you set up your private factory in this place, where we don't want you to be, or if you set up a factory for lipstick here, which does not fit into our development programme, well you can expect the worst possible treatment from us. You will have to pay for your public services that you require, you will not be protected from foreign competition. Don't come to us and say, 'I am a domestic firm, I have to be protected against foreign competition.' You will not get profit exemption, on the contrary, we will scrutinize your books and you will be taxed according to the letter of the law on all your profits." Well, that is an example of trying to make the development project in the private sector fit in with the public programme by the method of discriminating inducements. In the last resort, the most powerful weapon that the Government has to prevent these undesirable developments in the private sector, is direct physical allocation. The Government can always put itself in a position, especially in times of shortage, to say, "We don't give you any foreign exchange to import machinery to set up a lipstick factory, but if you want to set up a cement factory, we will give you foreign exchange," etc.

NEED FOR INCLUDING THE PRIVATE PROJECTS IN DEVELOPMENT PROGRAMMES

You may now discern the point that I am driving at. The development programme of an underdeveloped country, if it is to be a real development programme, must include the measures of inducement on the one hand, or of control and penalty and prohibition on the other hand, by which the Government proposes to make the activities in the private sector, and especially those directly productive projects, correspond to its own direct development programme, which will very largely be a public service programme. This major point I shall again want to make it at a later stage, but provoked by the discussion that has arisen on the basis of the distinction between overhead projects and directly productive projects, we may come to it here and now. A development programme which includes only public service projects, and nothing else, is not a real development programme. It is a collection of projects, and mind you, I am not running it down. It may be much better than no programme at all. It is much better to put all your public service projects together and see what they add up to, and how they fit in with each other. That is an immense improvement, compared

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with just having one project after another, without any conscious adding up. An economic development programme, however, must include the activities in the private sector—if there is a private sector. Your public service programme may look highly efficient taken by itself, but you cannot possibly judge its real economic efficiency unless you consider what will happen in the private sector.

Your public service programme cannot possibly be drawn up unless you know or have found an idea of what is going to happen in the private sectors. If cotton production develops in your country, quite a different kind of public services will be required—different harbours will have to be developed, different roads will have to be developed, different settlements may have to be established, different housing policies will have to be formed—compared with what would happen, shall we say, if you develop a system of subsistence farming by small farmers for their own consumption. Now there you have an illustration of how a public service programme may be good, if you look at it by itself, in the sense that it has been technically well prepared and everything fits in very nicely, everything is very carefully worked out, what we now at this Centre call the cost and benefit appraisal has been very nicely done. But whether it is a good programme or bad programme in the economic sense, no one can tell at this moment. The determining factor, which will decide in the end, whether this is a good programme or not, is whether the Government has made the right assumptions about what is going to happen in the private sector, or whether it has made the wrong guess.

There are several possibilities. Perhaps you have made the right guess, and private enterprise does by itself what you expect them to do. That, however, is an unlikely coincidence. In that case, you have been very lucky, and you can safely adopt, what in political philosophy is called a *laissez-faire* attitude to private enterprise, a live and let-live attitude. You can leave them alone. In that case, you do not need to have any public planning of the private sector. You may still want to do it for other reasons, but you don't have to have it. But if private enterprise does not do what you expect them to do, then you cannot have a live and let-live attitude to private enterprise, or else your public programme service will be wasteful. But even then it does not follow that you must nationalize private enterprise, because there may be other ways of making private enterprise fit in with your development programme. It may also be open to you to change and re-adjust your public service programme.

The point has been made that often the public authorities know perfectly well what is going to happen on the directly productive side. So if only they provide the services, there is no need to worry about that very much. I would certainly agree with that as a general proposition, as long as you think, as we tend to do in this Centre, in terms of specific agricultural projects. If you provide the irrigation, you can be fairly certain that farmers will grow rice. But the kind of problem that I have in mind in this course is not so much the undertaking of particular projects, but public service provision for some anticipated development perhaps in 5 or 10 or 20 years time. When you lay out the power system of a country or the railway system,

the road system of a country as a whole, not for a specific project, your problem is quite different. If we deal with one particular project, the problem is much more definite. How much equipment do I have to bring in, in order to undertake this project? How many tractors, how many bulldozers, how much machinery, how many excavators? What roads, what depots, what facilities do we need to bring this equipment in? What facilities do we have to have on the spot, to undertake this project, housing for the workers and all the rest of it? What facilities do we need to cater for the increased population, which we may attract into this particular area when we undertake the project? Then again the product that we produce, the increased product, has to be moved and marketed. It may have to be processed. All that requires facilities.

But what I had in mind now is the construction of railways, not to cater for a specific project, but to open up your country, or particular regions of the country, in a more general sense. The building of railways, as you know, has played an immensely important part in the economic development of the United States, or of Asiatic Russia. The railways in these huge continental areas were, you might say, the skeleton around which the system grew. Now, if you are faced with a problem of that kind, you deal with a different set of unknowns. What is the best way of opening it up? Air Transport, Railway, River Transport, Road Transport? Supposing you have decided on Road Transport. How many main roads, how many secondary roads? How to maintain the roads? Where to locate the roads? For how much traffic shall we provide, for what kind of traffic?

In this kind of problem, I think in general the situation will be that you cannot tell for certain, at the time you develop your project, what the demand for your services will be. Now there are two possible answers to the problem which I think are wrong, and which I did not want to put forward. The first wrong answer to this problem is, "Let's not build our roads. Since we cannot tell for certain what is going to happen, let us do nothing at all."

The second solution is this, "We cannot tell for certain, what is going to happen, but we want this railway, we have our plans, therefore, we must press economic reality into the plans that we make for it. This means we must regulate the economic life of the region in all details. We have built a road here on the assumption that farmers will grow sunflowers in this particular area. Therefore, in ten years' time, we must force them to grow sunflowers in this area, so that our public service scheme is right." That approach is also wrong, because in the process of justifying your public service programme, by forcing private activities into the pattern that you have laid out for it, you may do more harm, than by admitting at a later stage that some part of your development programme was wrong.

You can never accurately foresee what is going to happen, and if you have public service development of this anticipating kind, which does not just cater for a specific project or for a given demand, but which looks ahead, you will always make some mistake. That is inevitable in the nature of things. It is not possible to have perfect foresight of what people in the private sector are going to do in the next 20 or 30 years. If you have a

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strong central authority and the desire to do so, you may possibly force people into doing what you had planned for them. But that is not necessarily the best way of planning economic development. It may still be cheaper to let private activities, in 10 years' time, take place in the regions and in the way which seem best suited to the conditions in 10 years' time, and change your public service projects accordingly, or even write off some of your public service programmes as a mistake. Those two approaches, I should say, are common defects of planning for economic development, either to lie down like Buridan's ass between two bundles of hay and do nothing because you can never be certain what is going to happen, or alternatively to say "We assumed that this was going to happen, therefore, whatever the economic cost may be, we must see that this is going to happen." These two approaches, to my mind, lead to waste of economic resources and retard economic development.

THE NEED FOR RESEARCH AND INDUCEMENT

The only right course that I can think of is to make as certain as you can, at this particular moment, that your assumptions are right. For instance, if you build, say, roads, in order to open up a certain agricultural district, the important thing is to go through a great deal of detailed research to make sure that this particular area is actually the one that is most suitable for agricultural development, to go into a great deal of soil testing, to determine what are the right kind of crops that can best be grown in that particular area, to study production, consumption and price prospects for particular crops. That is to say, to take a great deal of time and trouble over working out what would be going to happen in that particular area in the light of the present circumstances, if everything went according to scientific analysis and if the farmers or industrialists who are going to settle in this area did what is best in the light of your research. Then when you are convinced that your assumption is the best possible from that point of view, try to induce private enterprise to develop on the lines that you are convinced, after all this painstaking research and investigation and analysis, is best for the economy as a whole.

You will never be able entirely to induce the private sector to conform to your assumption. Prices may change, and crops which seem to be profitable now may not be profitable in ten years' time. Instead of growing cotton, people may grow rice, and all your harbour development, shall we say, which was based on the assumption that there would be cotton development, may be thrown out of gear. That is possible, but all the same, this seems the only feasible approach. First, a great deal of trouble in finding out what activities in the private sector are likely if the private sector develops on the lines that would best serve to increase production in your economy as a whole. Secondly, a set of measures, partly controls and partly inducements, to try as far as possible to get development in that area which you open up into the lines that you visualise.

Some of these things may seem very commonplace, for instance the need for careful preparation and research. But, there are many examples that one could quote where a development of this kind is rushed and is based not

on a detailed examination but shall we say on some wild guess, or perhaps based on the needs of the moment, which may be very temporary needs. Perhaps the best example that I can think of is the famous groundnuts scheme in Africa. The need of the moment clearly was to increase oilseeds production. There was a world food shortage, there was a very specific shortage of fats and oils and above all there was an even more specific shortage of fats and oils from non-dollar sources. Because there was this over-riding need of the moment, people allowed themselves to be rushed in their decisions. Take for instance, soil testing which I had mentioned before. There was no possibility of mechanical analysis on the spot. And in that particular case that proved a fatal mistake because the soil in the area where the groundnuts were grown contained a much higher clay content than had been assumed. And as a result of that, the soil was much more compact and much more abrasive than had been assumed. This is quoted not by any means as the only case but for illustrating the kind of mistake that is made in many of the projects.

THE RISK OF PUBLIC SERVICE PROJECTS

Let me point out first of all, that public service programmes involve risks—as I have said before. You may be right or you may be wrong. But if you do not provide the right sort of public services in your country, you do not reduce the risk, you only shift it on to other people. One of the great drawbacks to the development of enterprise in underdeveloped countries, is the fact that to start a new factory, a new plantation, a new farm, or any new business of your own, is much more risky than it is in the more highly developed countries. In the highly developed countries, the risk of enterprise is greatly reduced by the wide availability of supplies and of all sorts of services. If you start a factory in the United States or in England, you can be absolutely certain that you will get your power, you will get your transport requirements, the boxes and crates that you need, the components that you need, etc. All these things are laid on for you—all you have got to do is to ask for them. Therefore, if you fail to provide public services, you may, of course, reduce the risk of being wrong in your planning—you may be able to pat yourself on the back and say ‘I have not made a mistake’—and yet as planners, the job is not to avoid making a mistake, but to promote economic development.

Supposing I provide public services which are not quite of the right kind, in the sense that looking back on it in ten years’ time—I decide that I would have done things differently if I had had perfect foresight—I would have put this road here, not there, I would not have gone in for hydro-electricity, I would have had a thermal station there, etc. But in spite of these mistakes that I made, I am glad that I did these things ten years ago. The benefits from it may not have been quite at the theoretical maximum, yet this service provision has amply repaid itself in terms of the economic development that I got—in terms of the increase in the national income. That is the only test of provision of overhead services, whether they make themselves paid in terms of the increase of national income that you get as a result of it. If you get that result in those terms, your public service provision has been productive, and you don’t need to worry about the mistakes that

you made. Then it is not a matter of great worry that if you had shown perfect foresight—if you had known exactly what everyone was going to do—what prices were going to be like, what private industrialists were going to do, what imports and exports were going to be like, then you would have done things differently.

Provision of these overhead services in your public development programme is like buying an umbrella. It is no use when you have got an umbrella, to avoid getting your umbrella wet. You can always conserve your umbrella—it will last you longer, if you do not expose it to rain. Just keep it at home when it rains. But that is not the purpose of an umbrella. You will not think you are clever because you have preserved your umbrella and did not make the mistake of getting your umbrella ruined. The umbrella pays for itself by fulfilling its basic purpose—Keeping your clothes dry.

The same thing is true of these overhead services. The idea of laying out a network of services is not just to have it. These services are not productive by themselves—they are agents in production. To argue, that the best plan is not to have any overhead development at all, until after there is a fixed demand for it—that is behaving like that person with an umbrella who does not want to take it out into the rain. The purpose of an overhead programme is to stimulate development and in that process, inevitably, there are mistakes—there can be no certainty in life. There are many development programmes of this kind, that you can tell now that in some respect have been wrong, and yet at the same time, they have been justified.

I suppose you all know the famous story of Buridan's Ass—the famous ass, who was faced with two bundles of hay, which were equally juicy, equally nice, equally attractive, equally colourful. That poor ass could not make up his mind, which of the two bundles of hay he was going to eat, so he just laid himself down in the middle between the two and starved to death. That shows what may happen if you are too meticulous about showing perfect foresight in your public service programmes. There are situations, where it is better to do something than to do nothing—even when you can not be quite certain that you are doing exactly the right thing.

This I wanted to say in order to balance what I said, in my last lecture, about the great need for detailed and careful research. That is a different matter. Careful and detailed research is never a waste of time. It is not what I would call doing thing. When I say it is wrong to lie down and do nothing, I do not mean it is wrong to wait until by careful research you have been able to establish exactly what is wanted, what is the best way of doing this job—that is not doing nothing.

THE TIME TO WAIT AND THE TIME TO ACT

Probably one of the greatest sources of mistakes in economic development programme, has been, first, to wait too long without having a program-

me at all, and then when you have got your programme rush it through without sufficient research. This means, first to allow yourself too much time, being inactive, letting the directly productive projects grow and waiting too long before thinking out your overhead projects, but then rushing into it. You can make great mistakes and waste a lot of money by not giving yourself, at that stage, a year or two for careful research of the kind that I mentioned at my last lecture—soil-testing and so forth. The important thing is to be patient at the right time and to impatient at the right time. It pays to be impatient as far as long run development planning is concerned when you think of the development of your country and what you want the resources of your country to be in ten, fifteen, twenty years' time. At that stage, my proposition is that it is important to be impatient and move your overhead projects ahead to provide before the productive projects are there. But for short run planning, when it is a question of having a project and then trying to determine whether you should start it now, or in six months' time, or in a year's time—when you are faced with that sort of problem, my feeling is from studying these development plans and policies, that it pays to be patient.

But now let me mention another thing, which I also feel is very important. If there is a project that can wait, without any harm to your economic development programme, then it would be wrong to it now. It would be wrong to do now what you can safely leave till later. That is an important principle. There are two reasons for that. The first reason is that if you can wait with a certain project without any harm, then it is better to wait, because in three years' time or in five years' time, you have more knowledge, more data to go on, and you are less likely to make a mistake. If you do something now—shall we say if you build an electricity station now to cater for a demand that you expect in ten years' time, well then you may be quite wrong—you may build your power station in the wrong place, in the wrong way, provide the wrong power capacity—possibly in ten years' time, for all we know, there will be atomic power for industrial use, and all these power stations that we are laying down now will be partly obsolete.

The second point is that underdeveloped countries are poor countries, and it is wasteful to apply present resources on something that caters for demand in ten years' time. This type of project should have a very low priority. The point in development planning is to try to increase the resources which you will have available in five or ten years' time, and if your development planning is successful, that is what is going to happen. If you are right in your approach in ten years' time you will have more resources to do this job—it will be easier for you to do it then. Therefore it would be wasteful to do something now with your very scarce and limited resources that you could equally well do in ten years' time, when your resources will be greater. The right thing then is not to do something now that is only needed in ten years' time. The right thing is to place yourself now in a position so that you have more resources in ten years' time, and can do the job more easily then. If you have a job that caters for demand in ten years' time, the right thing is not to do this job now, but to do some other development job now that will give you increased resources in ten years' time, so that in ten years'

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time you can do that particular job more easily. As a general principle it is certainly right in development planning to say "never do now what you can safely leave till later"

A very important point has now been raised and a point to which I was just coming, namely, flexibility in your project. How far is it possible when you have a combined resource project, shall we say, like the one that was mentioned (the Damodar Valley Authority) to do the urgent things that you need, like irrigation for example, immediately and be flexible, leave the rest for later? For instance, leave your power supply till later? Now that may be very uneconomic. You must remember, the principle that I laid down, was never do now what you can *safely* or *economically* (I should have added that) leave till later. When you have a combined project, your situation often will be that it would *not* be economic to do one part now and another part later—that might increase your cost. It may be better to do the whole job now, because then you can do it as a combined job and derive great economies of planning and of production from doing it as a complete job—all at once. In that case, you would not have a situation when you can safely or economically postpone it.

Well, of course, we all agree with flexibility—flexibility is sound and it is necessary. It is always sensible to leave yourself some elbow room in your economic arrangements. If you can be flexible, there is no need to tie yourself down to a particular course of action, if you can keep things going on a provisional basis and make some of the decisions in three or five years' time when you know more—so much the better. For instance, it might be possible to be flexible in your roads—have the main roads which will link your main towns with your main ports, but with your secondary roads, that cater for local agricultural production, let us have two different plans. One, perhaps, on the assumption that rice production will be started up and another on the assumption that cotton production will be started up.

THE "POINT OF NO RETURN" IN PLANNING

We should always be flexible. I think it is an important principle of development planning, that we should start from the situation as we find it at the moment, and never go back into past history. In development, it is bad to be too historical—to think too much of what has happened in the last five or ten years. You have got to take the situation as you find it and if your original plan looks wrong, in the light of the information that you have at the moment, you should always change it. You should never adhere to a plan because it existed as a blueprint last year, or two years ago. As David Lilienthal, the famous chairman of the Tennessee Valley Authority, puts it from his experience, you should never have one plan, you should have a series of developing plans. By that he means that you should always revise all your plans as you go along. Wherever it is possible to change your plan in the light of changing circumstances, well, in that sense we should all be flexible. Also, we should be flexible in the second sense that where we can make provisional arrangements and in that way avoid the need for

making a decision now that we could make more usefully, more economically, at a later stage, we should do that

But here again, I think I want to add a word of warning because there is a French saying that I would like to quote, which I think is of great relevance to development planning "Rien ne dure que le provisoire" "Nothing turns out to be as permanent and lasting as the provisional arrangement" There are many development projects which have resulted in very lasting and permanent installations of various kinds which started out as provisional arrangements—as makeshifts In any development project, there is what may be called a point of no return There is a point where your opportunities for flexibility have come to an end Supposing it is a large scale multi-purpose project like the one that was mentioned, when you are half way through your project, or before that, when you have made the dams, got your power equipment, etc., well, there is a point of no return At that moment, perhaps two or three years from starting the project, you may have arrived at a situation, where you may have to say. "My project is wrongly conceived. I was wrong in a number of assumptions that I have made. My costs turned out to be higher. Things have happened that I could not possibly have foreseen three years ago. There may be war conditions or difficult supply conditions. I cannot get the machinery that I counted on. Prices have changed" And yet, at this point the right course of action will be to complete it, to go on as you have planned it, because the cost of scrapping your project or the cost of changing it radically at that advanced point, may be much greater than the waste involved in not having done the right thing from the beginning

It is one of the purposes of planning—right planning—to postpone that point of no return, to be as long as possible in a position that you can still change your project or your development plans in the light of changing circumstances But I think it would be futile to imagine that you can do that all the time There comes a point in the economic life of a project or in the economic life of a development programme where you have gone so far that you have got to go through with it. When that point comes, when that happens, there is no point in being too historical. You have always got to take what you have got at the moment—those are my present resources, in the light of the present circumstances, what is the best I can do with them? If your project is already half completed, it has become part of the economic landscape, of your present resources. It is very important in projects of this sort, to be aware all the time of the point where you can still change. Am I at the point where I can still change? Am I at the point where I am definitely committed to going through with it as planned? Or somewhere in between, where I might still change some secondary features? To change a little here, reduce a little there, add a little there? After you have started certain projects, it is still vitally important to collect current information to see whether it would not pay you to change some of the features of the projects, even if your project becomes technically less efficient. But you cannot keep all doors open all the time. The only thing to do in that case, is to postpone that moment when you are finally committed to a project as long as it is economically possible. You cannot postpone it indefinitely. I think with that discussion we have a fairly balanced picture

IV Dispersed *versus* Concentrated Development

Now let me take up another problem, arising out of this relation between overhead and directly productive projects. This is important, especially in those underdeveloped countries which have a large area, countries like India, or China, or Brazil, or Pakistan. The general picture in those countries will very rarely or hardly ever be the picture of a country that is equally underdeveloped in all its parts. We always talk about countries as either "highly developed" or as "underdeveloped". That of course is an over-simplification. It is the kind of over-simplification that we need. But an underdeveloped country is never equally underdeveloped. In nearly all underdeveloped countries, there are certain areas of urbanisation, industrialization, or highly intensive agricultural development. There are areas of higher standards of living than the rest. For instance, in nearly all underdeveloped countries, I think it is true that the coastal area, or the area around the major ports, is more highly developed than the rest of the country. There are such areas as Shanghai, shall we say, in China. The Shanghai area itself is hardly an underdeveloped area. In the case of Brazil, you have a condition where the narrow coastal belt and the São Paulo region is fairly highly developed. Brazil is an underdeveloped country because its vast interior is always completely undeveloped. I think the same is true of most underdeveloped countries.

Now you are faced with an interesting problem. You have your overhead services, your public services in one part of the country. Let us assume for instance, Karachi is the best developed part of Pakistan in that respect. Karachi, shall we assume, has a good network of public services. There is water there, there is transport in the area, there is electricity, there are harbour facilities, that health services are better in that area than in the rest of the country. That, of course, is only an illustration. In the case of India, you can easily think of two or three of the major towns which, with their surrounding area, form a fairly highly developed part. Now here is your problem. If I try to draw up a programme for the economic development of my country in such conditions, where do I start? It would be cheaper to build on what you have already got. It would be cheaper to go on adding to the development of the area, that is already more developed. In the case of Brazil, there is no doubt at all, it would be much cheaper to develop the coastal belt than to try to open up the interior, because there you have many of the required facilities already available. In the case of Pakistan, it may be cheaper to concentrate further development, say in Karachi, where everything has already been provided—or in the case of India, shall we say on Bombay. But, on the other hand, if you are dealing with the problem of underdevelopment, or lack of development, it seems logical, to deal with it where it is worst—where the real underdevelopment is—not to keep to your one or two urban areas which are already highly developed, but to go out into the interior, where there is practically no development. It is very much cheaper to build your directly productive project where the overhead facilities are good. But, on the other hand, the area where your overhead facilities are good, is likely to be your more developed area. Now what shall we do in such circumstances?

The first thing to say is that quite often, the decision is not for the technician and not for the economist. Often, there are political arguments for doing it the other way. For instance, many of these big countries—that will certainly apply to India, it would apply to Pakistan, it would apply to Brazil—are also countries with a decentralized political structure. They have not only a central Government, they have States, or they have Provinces with their own government, with their own parliaments, with their own budgets, with their own development plans. Quite often, the decision whether development is to be concentrated in one part of the country, or whether it is to be spread out more or less evenly over the country, is made for you. You have got to accept political realities, and you have to fit in with the political structure of the country with which you deal. It seems futile for an economist, shall we say, to go into a country that has a decentralized structure of that sort, and to recommend that all development should be concentrated in the capital. The individual States or Provinces may be very powerful, and influential—they may be the main agents of development work, and they simply would not stand for it.

There are other circumstances, where a country may have, shall we say, political reasons for taking development into the interior. For instance, some of these very large countries have a great desire to integrate their territory—to link the various outlying parts of their vast territory by transport, to build a railway between the capitals of their outlying provinces, etc. These countries very often feel that their first necessity is to link their area together in one unit. Well again, quite often you have to accept that kind of position, where a country is determined, shall we say, on political grounds to build a railway from its capital to an outlying province, in order to link the capital to the outlying districts, so that proper administration can take place. There is very little point in criticising that decision on economic grounds.

I would not say that in the approach to development planning it would not be very useful, for your own purposes, from time to time, to ask yourself this question: "Well, the actual distribution of economic development in my country is very largely determined by the amount of money that the various provincial governments have—but supposing that I did not have any provincial governments? Supposing I had a central government here, would I spread my development the same way, or would I do it differently? Would I concentrate it in some areas?" It may still be a useful thing to ask yourself, because it may tell you something about the economic cost of decentralized development. It may be wasteful to decentralize economic development and spread it over the whole of your country, instead of concentrating it. You may have to accept that as a practical planner, in the sense that all your schemes which did not fit into that reality, would remain paper schemes. But from an economic point of view, you might still render useful service to your department, to your Government, or to your country, if sometimes you try to work out the economic cost involved in this kind of decentralization.

Let us return now to our previous question. Shall I put my directly productive project in the more highly developed area where the facilities are, or shall I go out into the wilderness and develop from nothing? We are now assuming that you have no political limitations, that you are free

to answer that question as an economist or as a technician and development planner. My own answer to that question would be along these lines. In practically all underdeveloped countries, certainly in all which are represented here, the great difficulty is that national income is too low, that national resources are grossly insufficient even to make a start in proper continuous and cumulative development planning. We cannot go in for the normal kind of planning until our resources have reached a certain stage where we can regularly spare from direct consumption sufficient resources to get this cumulative process in motion. But, to my mind it would be quite wrong to think in these terms now. The important thing now must be to raise national income, to raise the level of resources as quickly as possible and as rapidly as possible to that level where we can begin to plan properly. Now if that analysis is right, the answer that would be suggested to our particular question is that it would be right in such conditions to undertake your economic development where it can be done most cheaply, that is where the overhead facilities are already available, and to carry it into your less developed parts—into the wilderness—at a later stage—thus utilizing the increasing resources that you will get from building up the areas that are already well developed now. Then you can plan for making your development spill over into the less developed parts.

V Expensive and Inexpensive Development Projects.

I said just now, that it is useful to split up economic development in two stages. During the first stage, the important thing is to achieve a level of output which is sufficient to make development cumulative from that point onward. Now if that suggestion is right, there are two problems. First of all, what is this minimum level, as I want to discuss, and secondly, what do we do to get to this minimum level? I shall take the second question first.

The policy that would follow, from what I had said yesterday, is that in the early part of development, while you try to get to this level, emphasis should be heavily on cheap projects, that do not necessarily involve any great capital outlay, that utilise as much as possible existing services that are more readily available in the more developed areas and things that do not require much capital. I think it should be an essential priority at this early stage in any development programme to think very hard and explore all possibilities of increasing output without capital investment.

IMPORTANCE OF GOOD INSTITUTIONS

Now there is a good deal of economic development, that can take place without capital expenditure. That is an especially important point to make in this place, because we here in this training centre, quite naturally, tend to think of development being the result of projects that cost money. Especially, we tend to think in terms of big projects. Our whole approach is based on the assumption that we are dealing with fairly large projects,

which involve considerable capital expenditure, and then you want to control this capital expenditure, to keep proper account of what you spend, compute the benefits and all the rest of it. Now we must never forget that economic development may just as much depend on good economic institutions as on economic projects. You can promote economic development often just as quickly, and much more cheaply, by an improvement in your economic institutions, rather than by capital expenditure, by a project. For instance, to give you an obvious illustration, if a Government does not maintain proper internal law and order, if it does not maintain proper legal institutions, under which property rights are clarified and protected, it may spend a lot of money on economic projects, having a big irrigation project, etc., but it might be much cheaper and more effective for economic development, if instead of devoting its energy to capital expenditure, it would improve economic institutions, provide better legal assistance, provide better property arrangements. These things are vitally important. Therefore quite often in underdeveloped countries, it is possible to come nearer to that level of output, where a development project or a development programme can begin to start the process of development, and without capital expenditure. The first step in a development programme always should be to see, before we start spending capital, before we start spending money, what are the improvements we can do without spending money. Quite often the institutional improvements, which cost no money at all, or very little money, may provide an extra output that will help you very greatly to get to the stage where you can contemplate larger projects.

I cannot stress that too much. The first job of a Government is to provide the right type of economic institutions for economic development. That is more important even than for a Government to have a big development programme. When you are asked to write a memorandum, or form an opinion, on whether particular Governments follow the right kind of development policies, I do not start looking at their development programmes. That is the second stage. Do not even immediately start looking at the financial policy of the Government, its measures to finance economic development. The first job is to look at the general policy of the Government. What is its level of administration? Does it maintain Law and Order? Is the legal system of the country, suitable to economic development? Are the general health services well administered?

There was a U. N. mission to a country in Latin America during the last year. One of the things that was pointed out in their report, was that the Government failed to maintain a proper control over milk supplies. That is to say that a great deal of the tuberculosis and other troubles in that particular country, could be avoided if the public authorities, both local and national, would fulfil one of the essential duties of Government to keep an eye on the quality of food. Well, they were not doing that. On the other hand, the Government were going in for promotion of economic development by building hotels as public enterprise, in order to attract visitors. Now building hotels to attract visitors may be a very sensible policy, I shall not say anything against it. If you attract foreign visitors you earn dollars, and in exchange you can import machinery. But it would have been wrong to say that the Government were properly promoting

economic development, because the more important thing, in that case, certainly was the proper control of milk supplies

There is another illustration in the enormous amount of political instability in some underdeveloped countries. There you can say that as long as there is no stable government, or more stable government, it would be almost futile to have individual projects. There can be no continuity of development policy, no private investor or producer will know where he stands, if the Government changes every two or three months and the next Government comes forward with a different policy from the previous Government.

Economic development does not start with capital projects. The projects that we are discussing here, are the second stage in economic development. The first thing to do is always to see, how you can promote economic development without spending money, without capital expenditure. It seems to me to be a common mistake for the scarce resources of underdeveloped countries to be wasted by their preference for capital projects at an early stage, and a failure to do everything that could be done, to create the right kind of economic institutions.

CHEAP PROJECTS

Secondly, I think where development does require particular capital projects, the stress through that preliminary stage should be very definitely on cheap projects. By that I mean projects where the capital intensity is low, you get something fairly rapidly, not in 20 or 40 years time, but next year or in two years' time, without any heavy fixed capital installation. For instance, at that stage, my suggestion would be, that if you could increase agricultural output, by better extension services, by improved seeds, hybrid seeds for instance, the priority should be to the provision of better seeds, rather than by irrigation, because it does not cost any money at this stage, and yield results more quickly. Wherever possible, leave those things that cost a great deal of money to a later stage.

For instance, take the Punjab. This particular area has a very highly developed canal system possibly more highly developed than anything of this kind in any part of the world. Now I am not a technician and it is possible that I am technically wrong, but supposing it were possible to use the canals for navigation, rather than build roads and railroads? One of the striking features of the Punjab is a complete absence of navigation on the canals. Another possibility that is being used in some countries (but again I am not saying that can be done here) is it possible to use the flow of the canals as a prime mover directly for the generation of power? It would save the cost of heavy generators, which of course, are one of the most expensive and costly items, it also would save foreign exchange. Now I should say at this present early stage in development, if that is technically feasible, that would be just the kind of project that should get a very high degree of priority at this present moment in Pakistan. I do not know if any technicians from among you will get into me and tell me why I am wrong. That is quite possible, but in that case not my principle but my illustration was wrong.

VI The Initial Fund for Development

THE CASE OF RUSSIA

Let me add something to this. Quite often in the course of the economic history of particular countries, you can point to a certain thing that happened to raise these countries to this minimum level where the cumulative development process begins. That is my interpretation of the economic history of the U S S R. In Russia, you have an example of what is clearly very successful planning for economic development, where economic resources have been increased rapidly. Take the period from 1920 to 1940—beyond doubt here is a very successful development planning. Now the great mystery, the thing that should puzzle you, to my mind is not so much what happened in the nineteen-thirties. Once the development plans had got going, in the nineteen-thirties, you can see the cumulative principle at work in Russia, where any new development where any new power plant shall we say, or any new large project helped again to finance some other project. But what is of special interest in Russia, is the early period, the nineteen-twenties, say 1920—1925. How did they manage to get to that point? They started up in 1920, from practically nothing. They had very rich natural resources, but apart from that there was a condition of complete chaos and lack of anything. They must have been given a big push somewhere. In 1920 they had a job to keep themselves alive, they were starving. In 1926 they had got into a position that they could start planning for economic development. Now what happened between 1920 and 1926?

What happened I think was the collectivisation of agriculture in Russia. That did the trick during these years. That produced the increased food output in Russia which provided the initial fund. It was the reorganization of the land tenure system in Russia, land reform. Now that is an example of one of those changes in institutions. It did not cost them any money directly, but the purpose of collectivisation and land reform was to mechanize agriculture. But the initial change, the initial development project was nothing that involved any capital expenditure, and in Russia, this institutional change was successful in the sense that it resulted in increased food supply, which enabled Russia to increase the proportion of their population in industries. Russia could not have undertaken these development projects, if she had not had surplus food from the countryside. That was the basic requirement. The thing was to achieve some surplus food supplies. Once they had these surplus food supplies, they could start planning. In Russia, these surplus food supplies, on my interpretation, were secured by legal changes. It does not, of course, follow that if other countries had followed exactly the same policy, it would have had exactly the same results. That would have to be separately studied for each country. But in Russia that was the single factor, that enabled them in 1926, to reach a minimum level where they could start planning for economic development. After that it became much easier.

WHAT IS THE MINIMUM STARTING LEVEL FOR THE CUMULATIVE PROCESS?

(a) *A numerical example*

Next, I would like to take up the second part of the question to-day. What is the minimum level that is required for continuous development? I will give you a numerical example which is very similar (although I have approached it in a slightly different way) to the numerical examples that you find in the U. N. Volume, "Financing of Economic Development". You will also find it repeated and more fully explained in the Bulletin for Asia and the Far East for the first quarter of 1950, page 20, "Resources for economic development and financial institutions in the ECAP region". The best approach, to my mind, in trying to gain an idea of the minimum level of national income that is required in planning for long range economic development, is to start off with the increase in population. You can lay down as a development policy, gradually to seek to reduce of the proportion that is engaged in growing food (largely for self-consumption)—say from 90 per cent which it is now, in those countries which are called underdeveloped, to let us say 30% or 25%, which it is in countries like the U. S. or in Australia, which are still large scale food exporters. Now that might be the ultimate goal, to reduce the agricultural population from 90% to 30%.

We may assume that the population of underdeveloped countries increases at the rate of $1\frac{1}{2}\%$ each year. If you put this increase in your population, into non-agricultural employment it will leave agriculture, exactly where it is now. If you go on doing this for about 120 years, in the end your distribution of population will have changed, from 90% in agriculture—10% in non-agriculture, to 30% in agriculture—70% in non-agriculture. Now you can shorten this period, of course, by assuming in our numerical example, that your increase in working population is more than $1\frac{1}{2}\%$, that it is 2%. It is fairly safe to assume that that will happen in the course of economic development. You expect your death rate to go down, you expect many more of the people who are born to survive to, and through working age.

Here then, is a numerical example. Take a population of one million. For Pakistan, with a population of 75 or 80 millions, just multiply all the figures that I give you by 75 or 80 as the case may be. If your country is like India and has 350 million inhabitants, you multiply everything by 350. If your country has 2 millions, all you have to do is to double the figure. But take a million inhabitants as our basic unit.

Among a million inhabitants, you will find a working population of about 400,000. Now what is or what is not the working population, is very difficult to decide. When you have an agricultural population, everybody works at harvest time, but by working population I now mean the population between the ages of 14, shall we say, and 65, but excluding practically all the married women in that figure because they will be needed for bringing up children and so forth. They are not assumed to be directly part of the working population. In the developed countries, the industrialized countries, the proportion is higher, because there is a higher proportion

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of the population in the productive age. In other words, in our unit we will have 400,000 workers. Now if you assume a 2% increase in working population, that means you will have an increase in your working population of 8,000 every year. In other words, your development problem is to place 8,000 people each year in non-agricultural occupation.

Now how much does it cost to do so? Well, of course, a lot depends on what kind of occupations you have in mind. There are some occupations that require very little capital. There are other non-agricultural occupations, like the steel industry or the chemical industry or other heavy industries which require an enormous amount of capital. Now evidently if you try to place your increasing population in non-agricultural occupations, I am assuming that you are not aiming during that period at anything like the industrial structure which the U.S. or England has got now. You are not starting off by building up your heavy industries. You are not starting off with steel, machine tools, heavy chemicals. I am assuming that in your programme you follow the sensible policy of doing the cheap things first, of building up light industries, that require little capital. That is my first assumption. My second assumption is that you are also not trying to apply the latest and most up to date and most highly mechanized American or Western European technical methods, that you are not for instance, trying to mechanize everything, to eliminate hand labour shall we say completely from building operations, that you are trying to do the thing in intermediate stages, instead of headpans, wheelbarrows rather than bulldozers.

Now how much would it cost you to place 8,000 people in non-agricultural employment? I think at present price levels, in a tentative way, based on experience in countries, that are similar in nature, 2,500 dollars per head is a reasonable figure. If you place a number of people in light industrial and allied employment, it costs about 2,500 dollars per head to equip them with the capital which they need. Here we have a first figure to go on. Let me stress once more, this is not an American figure or Western European figure. That is very much higher.

Now for these 8,000 people, the annual increase, at 2,500 dollars per head, you get a figure of 20 million dollars, which is 60 million rupees. To that 20 million dollars, you must add a certain figure. You also have to have a certain amount of investment in agriculture. Then, there is also your public service programme. You see, you cannot just equip these people with the capital they need and forget about public services which we have discussed before. Therefore to that 20 million dollars, you must make some addition. An addition of 10 million dollars for these purposes, is probably the minimum figure with which you have got to work. Add to your 20 million dollars, this 10 million dollars that you need for other development, and you have a total figure of 30 million dollars. That would be our requirement for a population of one million persons, under the policy that I have mentioned. That seems to me a very modest, very conservative estimate of the cost of economic development, in the early stages.

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What does this mean? In order to be able to have capital investment of 30 million dollars you must surely have a national income, a total income, which is not less than 150 million dollars a year. Let us assume that you can put 1/5th of the national income into capital, that you can save 20% of the national income from consumption. 20% of the national income going into capital, is a very high figure, which is equalled in very few countries. It would require very strict and competent policies.

Hence, our conclusion is that for full-scale development, a figure of 150 million dollars for one million people, or 150 dollars a head, is required. The average income in the Asia and Far East region is 40 dollars, less than one-third this required minimum. Hence the need for a preliminary stage in development planning when everything should be subordinated to a rapid increase in output by any means, preferably cheap methods.

(b) An illustration from Colombia

I would like to give you two illustrations of the point I made yesterday, namely, the great importance of cheap, and especially institutional changes, as distinct from capital expenditure. My first example relates to Colombia. In that case I am quoting to you, although not literally, from the report of a mission which the International Bank sent to Colombia last year. The full report of that mission is not yet published. I am talking to you now from an advanced summary. This report is well worth studying because the conditions described and remedies suggested will be of very wide application. When they went out to Colombia, the mission discovered that there was one basic problem in the Colombian economy. It was rather a special problem. In Colombia the productivity of agriculture was very low. Why was it small? Largely because in Colombia agriculture was carried on in the hill country, in areas not suitable for farming. The best farming country in Colombia—the country in the plains—was on large estates and it was not farmed intensively. The intensive farming is carried on in the hills, where the country is poor and there is no possibility of mechanized farming. That seems a topsy-turvy arrangement, very puzzling at first sight.

The first step was to discover the reasons for this basic difficulty. The problem was legal—institutional. The good land is in the form of big estates who had the best land in Colombia. In Colombia you do not necessarily have land to make a good income out of it by farming. In Colombia you hold land because it gives social prestige and protection against inflation. The remedy is not capital expenditure. The first remedy is legal change, in the form of a measure of land reform. If you go in for agricultural projects in Colombia without that, if you try to improve the output in the hill country, you are wasting the resources of Colombia, as well as those of the International Bank or whoever puts up the money.

You should read up this question fully in the International Bank's report, when the full report is published.

(c) An illustration from Pakistan

As a second illustration, I quote from a book entitled "Industrial Planning for Pakistan" written by B. A. Kureshi, Director of Industries for West Punjab. "One of the major problems of industrialists is the acquisition of land. It is almost impossible for any industrialist to purchase land by private negotiations within a reasonable time. Where there are big landowners, they invariably use extortionate methods. There is a particular landholder on the Grand Trunk Road between Lahore and Amritsar who has never done a day's honest cultivation in his life, but who has made immense profits from leasing his land to needy industrialists on unconscionable terms. When land is owned by a number of small proprietors the problem is virtually insoluble. To deal with them in a reasonable manner is humanly impossible. The Land Acquisition Act provides for acquisition by Government of land required for a public purpose like the setting up of a factory, but the procedure provided is so tortuous and cumbersome that it takes years before anything is achieved. It is, therefore, necessary that a simple and special procedure should be provided for the acquisition of land for industrial purposes. Once Government have decided that it is in the public interests that a particular factory should be set up, other considerations should not be allowed to hold up the progress of the work. It must be remembered that any delay in the setting up of the factory means locking up of public capital unnecessarily and preventing employment. Whenever the question of acquisition of agricultural land for industrial purposes arises there is always an outcry that poor peasants are being victimised for the benefit of rich industrialists. More often than not either the land is unculturable or the proprietors are absentee landlords. In any case, the whole theory must be contested. Agriculture and industry are both necessary for a planned and balanced economy, and one must make room for the other whenever and wherever necessary. Government should, of course, safeguard the interest of the proprietors of the land by obtaining reasonable compensation for them, but their objection should not be allowed to delay or obstruct the work of acquisition."

Well, I cannot tell whether this quotation provides an accurate description of conditions as they are. What I can say is that if the situation should be as described, then it would certainly seem to provide an illustration of the possibilities and needs for institutional reform, for development projects without capital expenditure.

VII Social Improvements *vs* Raising of Productivity

After these two illustrations of what I said yesterday, one from Colombia and one from Pakistan, I want to take up another point, but still a very closely related point. This point is the relationship between consumption and economic development. You remember we had divided the programme into overhead services and directly productive services. In both cases, the question of consumption *versus* development arises for each of these two types of projects. There is a distinction between projects which serve towards

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the increase in future resources on the one hand, and directly towards immediate consumption on the other. Certain overhead projects have an immediate effect in raising standards of living, for instance, hospital and other health services. Generally speaking, they are directed towards immediate improvement in living standards. Improvement of housing is another example of projects directly devoted to immediate improvement. On the other hand, some will not result in increased consumption, except in the very distant future. Most power and transport projects are in that category. It will help you to do something by which in the end you may be better off. The same distinction applies to directly productive projects. A candy factory, textile mill, etc., will make you immediately better off. On the other hand, industries such as a large steel industry, cement industry, chemical factory etc., will not make you immediately better off, but will again contribute to consumption increase in the distant future.

THREE STEPS IN DRAWING UP A PROGRAMME

When you draw up a development programme there are three separate problems which have to be considered. It will help us to see what development programmes must contain, to take these three steps separately.

SIZE OF PRESENT RESOURCES

What are my present resources for planning? What have I got in the way of labour in the various regions? What raw materials, what foreign exchange etc? It is a wrong approach to ask yourself first what you need. We can learn that principle from organisation for war production. War is very similar to economic development in some respects. Economists in underdeveloped countries may learn a great deal from the history of planning for war in countries such as England or United States. In the case of England, the first volume of official economic history has just been published. It describes the transfer from a peacetime basis to planning for war. This book is entitled "British War Economy" and is edited by Professor Hancock.

If you organize a country for war there are two approaches to the problem.

(a) What do we need? Call the heads of the various departments and request the nature and extent of their needs. The Minister of Food, for example—or the head of the navy—the airforce and so on. Then look over each request in turn to see how best to produce those requirements.

(b) Start with your resources. How many actual and potential workers have we got? How many factories? What is our productive capacity for steel, copper and the various kinds of metals? What is our shipping capacity? What are our imports likely to be? etc.

Which method is right? The first one is wrong. The second is right. We get results by starting from resources. As a simple illustration—you

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own a garden. You look for a gardener and you have two people who are available for the job. One person is a professional gardener who earns his living looking after gardens. The second person is a professor of agricultural chemistry from the University. They are of different calibre altogether. The gardener gains by experience—and makes the same mistakes over and over again. The professor of agricultural chemistry will be better as he will investigate soil, employ scientific knowledge, etc. However, if the professor of agricultural chemistry, instead of doing his proper job of teaching, works for you, his time is wasted and the community has lost because he could be doing a much more worthwhile job.

The way to consider the problem is to determine "What are the various alternative jobs for which the available people are best suited?" Therefore, the essential first step in drawing up an economic development programme is to know your present resources. Otherwise your projects may be technically sound but you have no means of telling whether the project is too big or too small or whether it will make the best use of your available resources. The first thing then, you must *know* your present resources. The national income approach is the right approach to economic development. Knowledge of present production of goods and services in its various major categories is essential. How much of what is produced is consumed? How much is needed for maintenance of the capital, for repair and replacement of industrial machinery, etc. What does the surplus consist of? How much unskilled labour have I got? Skilled labour? What is the present factory capacity? The import capacity? How much is the surplus available for new investment, for development?

ALLOCATION OF PRESENT RESOURCES

The second step. How do you allocate your present resources so as to establish the relation between consumption and economic development? The third step, how much of what you have got available for economic development can you allocate for immediate improvement say next year, or how much can go into the kind of development that will yield an increase of consumption in the distant future?

Those are three key questions in considering the right development programme. How much should we devote to an immediate increase in consumption, and how much to social improvement, and how much to long-term development? The distinction between productive development and social improvement, however, is not always very clear-cut. There are measures of social improvement that give immediate production returns, such as health improvement.

SOCIAL IMPROVEMENT CAN BE PRODUCTIVE—AN ILLUSTRATION

Malaria is one of the greatest obstacles to economic development in many countries. It comes at a time when labour is needed for harvesting. Reduction or eradication of malaria is a measure of social improvement and also one of the most direct contributions to production.

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This is illustrated by a report on the supply of DDT and BHC and other insecticides to underdeveloped countries prepared by the United Nations. Basic DDT is a product of chemical industry and can best be produced in highly developed countries. It is also best produced on a large scale. Therefore the main producing areas are the United States and England. It would be difficult and probably inadvisable for underdeveloped countries to try to develop DDT on a large scale. Thus, basic DDT is not a good item to include in the programme of underdeveloped countries. On the other hand DDT is always used as a solution of less than 100%, 15 %, 25 % or 50%. Before it is applied it has to be formulated from 100% to the lower percentage.

The process of formulation is very different from the process of production. Formulation is very simple compared to production of the basic substance. All that you need is large vats, similar to those used in many forms of textile dyeing. The process of formulating is distinct from producing and is highly suitable for underdeveloped countries. It is very cheap, thus a suitable project even for the early stages. The absence of formulation of basic DDT, etc., has involved countries in a great deal of unnecessary foreign exchange expenditure which might be better used for imports of raw materials or machinery. Instead of importing basic material, and for formulating it in their country, it is found that the great bulk of DDT imported into underdeveloped countries was in the form of formulated insecticides.

But the main point I want to put before you in that connection is that when you go into the cost benefit calculations of the efforts to reduce malaria you find that you have an example of a social improvement that is directly a paying productive proposition that you can justify. It is justified directly by the increase in output that you get as a direct result in the reduction of malaria. You have a project which affords social improvement and results by the same process in an increase in production which directly justifies the particular project.

Some of the cost-benefit calculations on this particular project showed that often the increase in output that you get within two years from the expenditure on a malaria eradication campaign based on DDT or BHC, will repay the total cost of the campaign, including equipment, formulating plants in underdeveloped countries, etc. There is no need here to distinguish between social improvement and increased productivity. In projects of that sort you can often be satisfied that both purposes are fulfilled.

VIII Consequences of Failure to Adjust Programme to Available Resources

Let us now consider, for a moment, what will happen if your programme is not consistent with your total resources. If your programme, that is your projects that are part of your programme, add up to more than a 100% of what you have got, what will happen? Well, one of two things will apply. Either, you discover that your programme is too big, and you find out, in good time, that you cannot possibly carry it out. Or else you will try to carry it out, and disregard the insufficiency of resources. Take the first possibility first. Now what will happen in that case?

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THE WASTE OF "RETRENCHMENT"

A lot of projects will have been started. Your programme contains, say, a hundred different projects, building a hundred different roads in different parts of your country. But by the time you have started on some of these roads you find that the money is running out. Let us assume that the monetary appropriations that you have got, are based on the available resources, that is on the yield of taxation or borrowing, on your public revenue, if it is a public programme. Your public revenue is limited partly by your low national income, i.e., low available resources but it may also be partly limited by an inadequate fiscal or administrative system. That is to say, it may be possible, even with your low present income, to get a little more public revenue by better taxes, or by extended Government borrowing, or by better collection of taxes. That may be possible, but even your enlarged public revenue is assumed to be limited by your total resources. When people do not earn money, you cannot tax them, nor borrow from them. Therefore you will find that your money is running out and you find yourself not with two or three completed projects that give you useful output, but you find yourself with a hundred things started and nothing finished.

Now that of course, is a bad state of affairs—it is a waste of money. That is not a theoretical danger, but one that you can observe in many countries, where you can quite definitely tell that the development programme contains too much—too much started and too little finished. It clearly should be an important principle of development planning that you must not start what you cannot be certain to finish. It is especially wasteful of public money if you construct two parts of a road, and then you find your money is running before you can provide the connecting link between the two, so that all the expenditure is quite useless. But that principle of not starting a project unless you are certain you will be able to finish it,—you see, it really leads us back to the study of resources, because how otherwise can you be certain you will be able to finish a project?

Other wasteful features of development programmes that are not consistent with total resources, that add up to more than 100% of the available resources, are not always so obvious, as in the example that I have just given you, the half finished road. You may, for instance, have constructed a railway line and you may have been able to finish that railroad line. Well, that railway line may be useless without an improvement in certain port facilities. If you build a railway line from the interior of your country to a port in order to move certain products for export, the whole scheme may be useless if your port facilities are insufficient to handle that volume. Therefore if your money runs out when you have built your railway line, and before you can improve your port facilities, the money that you spent on your railway has been wasted. You can say that country should not have started on the project unless they were certain, right from the beginning, that they would be in a position to finish all segments of the project simultaneously. The segments of the project, in this case the railway line and the port improvement, go together, and one is useless without the other. Unless you are certain that the combined project can be undertaken with your available resources, you are only wasting money in starting on it. The

project that is not within available resources, should never be part of a development programme at all

Another thing that often happens in many countries as a result of programmes that are too large scale in relation to the available resources, is that the programme has to be cut down about half way through. Now that is a great source of waste and inefficiency. If you lay out a certain project for a certain scale—shall we say you lay out a certain irrigation project for three million acres—and then about two years later you discover that you will have to cut it down, for lack of resources, the chances are that your whole project will be inefficient. You have to draw up new plans in a hurry. The whole balance of your project is disturbed, because the various things go together. If you cut down a project, it does not just become smaller, it also becomes less efficient, technically less balanced. That is another thing that happens if your development programme is not consistent with available resources.

Another very frequent result that one can observe is, that if a development programme is started, which is inconsistent with resources, and we start more than can be finished, it leads to considerable discouragement to the people who have prepared the plan, and who will be asked to prepare the future projects. There can be nothing more discouraging to the people in a central planning department, or in the planning section of a particular Government department, than to be asked to prepare projects, to spend a great deal of time and effort and also money on working out of projects, in working out the cost and benefit calculations of particular projects and then see the projects stopped half-way through. May be the normal departmental duties of the department are neglected over this, because the general arrangement, in most countries, is that the preparation of development projects is done in the Government departments. In your area, as far as I have the facts, there is hardly any country which has a separate Ministry of Economic Development. Nearly all your projects are prepared by normal Government Departments, and therefore, since the number of technical personnel is so short, it is possible that the normal departmental duties may suffer from having to undertake elaborate projects which will never be finished. There I would just recall what I said before, about the fact that efficient routine administration of a country may be just as important or more important for economic development than particular capital projects. You may not benefit your country if you start on an excessive number of projects in Agriculture and if, as a result of this, you have to neglect the normal routine, say of agricultural extension services. On balance, you may lose more than you gain.

Therefore to have elaborate projects started and then have to scrap them for lack of money, is a bad thing, because you are not just back to where you were before, you are probably worse off and you have probably discouraged your planners. The next time projects have to be prepared, may be when the means are available, possibly they will remember what happened to the first project, and they may become cynical. There is such a thing as that attitude of mind, in a number of countries. The reason for that is that development programmes have been drawn up, in the first place, which were in excess of actually available resources.

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If you ask me what single defect of development programmes is most common, I should say, to try to start too much, not to have the development programme adjusted right from the beginning to the available resources. In the end, in some countries that has happened so frequently in the past, that the whole idea of planning for economic development has become discredited. Lots of things have been started, nothing has been completed, then everything has been stopped for three or four years, then something else has been started in the light of changing circumstances, and that also has not been completed. It is quite instructive to study from this angle the reports that have been made by missions to underdeveloped countries, missions that have been sent by international organisations, by other Governments, by private consultants, which have been invited by the Governments of underdeveloped countries to come and make a report. By now there is a vast literature of this kind. I doubt whether by now, there is any single country for which we have not at least two or three such reports.

NEEDS AND RESOURCES

One of the common features of these reports is time and again to say, too much has been started, too little has been finished. "We recommend that development expenditure should be more concentrated on fewer projects." "We recommend that instead of building twenty railway lines, the country should concentrate on finishing two missing links in railway lines that have previously been started." The reason for such recurring statements is that there is a tendency to draw up development programmes that are based on needs. If you do that, inevitably you arrive at a programme that is above your available resources. It is logical that that should be so, because if your resources were sufficient to cater for your needs, you would not be an underdeveloped country. If you draw up a development programme for an underdeveloped country, almost by definition you have a situation where the resources are insufficient for needs. Therefore, to start to draw up a development programme, by starting from your needs, does not make sense. If you could carry out that development programme which is based on your total needs, you would not be underdeveloped.

I am not saying, of course, that you should have a development programme that has no relation to your needs. You must have a development programme that starts with your available resources. That is the first step to consider, but of course, the second step is to consider, what are the most urgent needs that you can satisfy with these resources. To have a development programme that is unrelated to needs would be grotesque, but the first step should be the question of resources. For that reason, I cannot stress too much the importance in underdeveloped countries of national income statistics. That is a vital first step in the drawing up of economic development programmes.

Now I find that is a proposition that is very difficult to accept. National income statistics sound very academic, the statistical exercise involved in working out your total value and volume of agricultural production, industrial production, your flows of income in different categories, the amount

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of your resources that has to be spent in replacing your capital, etc., all that sounds very elaborate. It seems a statistical luxury ; the Americans have got it, in England they have got it, but is n't it a waste of money if we start in our underdeveloped countries, building up these kinds of statistics ? Well, it is not a waste of money. It is essential for a good development programme.

THE DANGER OF INFLATION

Let me now get on to another aspect of our original question—What happens if your programme is too big for your available resources ? Supposing now that instead of cutting it down halfway through, you try to carry it through all the same ? In trying to carry through a development programme, that is too large for your available resources, you inevitably end up in a state of inflation. If you try to get out of your available resources, by way of development expenditure, more than the available resources can support, there is only one way out, one way in which the system can react, and that is by inflation. Something has to give. If you try to get a quart out of a pint pot, something has to give. The thing that gives is the level of prices. That is the inevitable feature and consequence of development programmes that add up to more than 100% of the resources made available.

You have spent money on particular capital projects. If you have not previously provided the extra resources to spare to go into economic development, you must try to take them away from somewhere else as you go along. You have got to drive up the prices of these resources in trying to get your development programme implemented. If your total resources are 100, and your resources that are available for economic development are 10 out of that 100, but your development programme is 20 instead of 10, you create an excess of demand for these resources over their supply ; the supply is only ten, but you want twenty. You try to buy sufficient labour, sufficient materials, sufficient steel, to carry through development programmes to the extent of 20 but only 10 of these things is available. By driving up their prices, you may be able to get these resources, to take them away from somewhere else. But where do you take them away from ?

Now one possibility is that you take them away from private investment. By trying to carry out a big development programme, putting a great deal of pressure on your scarce resources, you may drive up the prices of these scarce resources, so that your private investors go out of business. In that case you may think that you promote economic development, but there is a danger that in fact you may retard economic development. You may carry out public projects, but at the same time, you may destroy the economic activities which you expect will be based on these public projects. The important thing to realise is, that a public service development programme is only part of the total development of a country. Now if you try to finance your public programme, because it is too big, by measures that undermine your private capital formation, it may be that on balance you are doing more harm than good by your so-called development programme.

At this point we come up against a financial problem for the first time. So far, we have kept away from financial problems and have talked in terms of real resources. But here the question arises "Is it possible to finance economic development projects by inflation"? Even if a development programme is too big, isn't it true that we can always carry it out by inflation? Is it not true that we can always provide the resources for a project, if necessary, by adding to the amount of money? If we have a development programme, how can it ever be too big for our resources? We are the Government, we want to undertake this development programme—why cannot we just order the State Bank to provide the money for it so that we can buy the resources that are needed?

INCOMPATIBILITY OF INFLATION AND DEVELOPMENT

Well, my answer to that question is, that it is possible to finance a particular project by inflationary methods. If your idea of economic development consists in saying, "We need this Thal project, and that is what we want, and we don't care twopence what happens outside this project—well, if that is your idea of development, then I would say "Yes, you can always finance that particular project unless the project is enormously big and your resources are very small, you can always finance an individual project. There is never any financing problem for particular projects. If it is a public project, you are the Government, you control the supply of money, money buys resources, you can always finance a particular project.

But that is not economic development. By inflationary methods if necessary you can finance a specific project, but you can never, that is my conviction, finance a development programme by inflation. The idea of inflation and a development programme are mutually incompatible, they cannot go together. You cannot have, at the same time, a process of inflation, and proper economic development. The doctrine that inflationary finance is a good thing, that by monetary expansion you can increase output, you diminish unemployment, and achieve all sorts of good effect, that is my belief, is perfectly true if you apply it to industrialized countries.

In industrialized countries in the first place, you always have enormous unutilized resources. There are always great possibilities of expanding output in the short period. That has been clearly shown in the United States and in England during the war, when it was possible within three years, in the case of the United States, to double the initial output. In industrialized countries, there are a large number of unemployed people, working hours are short and people can always work longer hours; there are always many older people who have retired and can come back into production, there are technical improvements that can be introduced at short notice, there is a big reserve shelf of machines which can be brought into operation and are almost as good as the machines that are actually used. There are large numbers of married women who are not normally taking part in production, but in war time or in economic boom they come into production. In short, in an industrial system, there are enormous technical possibilities of expanding output and the problem there is to have sufficient

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monetary demand. The great trouble in industrialized countries is that in times other than war or other than boom, the forces of monetary demand are insufficient to call forth the full productive capacity of those countries. Now where you have a problem of that kind, where your productive capacity tends to outrun your monetary demand, well, then it is perfectly proper, then inflationary finance can do a great deal of good.

But the conditions that we face in economic development are completely different. The trouble there is not insufficient monetary demand. It would be absurd to think of underdeveloped countries as countries which could increase output rapidly in the short period, if only monetary demand were increased. If that were the situation, your country would not be underdeveloped. The position in underdeveloped countries is, that production is limited by technical factors, the absence of capital, the absence of skill, the absence of raw materials, the absence of public services, the absence of machinery. It is the technical and physical factors that limit the expansion of output in underdeveloped countries. You cannot cure a physical deficiency by monetary devices. The problem of economic development is to create the technical conditions under which output can be expanded, the skilled labour, the machinery, the raw material, the factories, the enterprise, the services that are required to create the physical condition for expansion of output. Demand does not help—supply must be created.

I would go a great deal further and say that inflation which is the result of development programmes that are in excess of available resources, not only can do very little good, but do a great deal of harm. To my mind there has never been yet a successful example of economic development combined with inflation. The examples of successful economic development that we can observe, have all been examples of economic development without inflation. There was no inflation in England during the period of economic development from 1789 to 1914, there was no inflation connected with the economic development of the United States, there was no inflation connected with economic development of Japan, there was no inflation connected with the economic development of the U S S R.

IX A digression —Consistency of Development Programme with Resources—an Illustration for Pakistan

We shall now digress in order to apply, however tentatively, the principle of consistency of development programmes with available resources to the present case of Pakistan. This is merely for purposes of illustration. The figures I have used are very rough approximations. I have neither the time nor the data here for the detailed research that would be necessary. One of the main difficulties in the measurement of available resources, for countries like Pakistan, is that a great deal of their actual output is not sold for money. There is a great deal of barter transaction, and a great deal of subsistence production. In computations of that kind, it is always very important to give consideration to output that is directly consumed; otherwise your figures will come out much too low. There are other intri-

cate problems of measurement. Take this problem of farmers' food produced on the farm. How should it be valued; at wholesale prices, prices paid on the farm? Or should it be valued at retail prices? These problems will be considered in more detail in our special meeting or National Income Statistics.

Perhaps the best figure to work from is a computation that has been made for India—for undivided India—for 1945. At that time, with all adjustments made, the total national income of undivided India in 1945 was estimated to be 62,340 million rupees. Now at that time India had about four hundred million inhabitants. Therefore the figure, roughly speaking, comes out at a hundred and sixty rupees per head.

I have been assuming now for this rough illustration, that there has been no change in the real level of production per head since 1945. I think that is probably an optimistic assumption. It is probably true that the level of real income per head has fallen, both in India and in Pakistan, since 1945, but I am now assuming that there has been no change at all in either direction. Following for the rise in prices since 1945, we then get two hundred and forty rupees per head. Now of course, that was for undivided India. The average level for Pakistan is lower than the general Indian level. Of course, that is not necessarily true for this particular area, the Punjab, but if you take Pakistan as a whole, almost certainly you should make some deduction for this figure which applies to the whole of India. The general figure for Pakistan would probably be somewhat lower, say 10 or 15% lower than that figure, i.e., perhaps 210 rupees per head.

Then, secondly, that figure is in Indian rupees. If you express it in Pakistan rupees also you ought to make some deduction, because of the disparity in exchange rates now. You would have to deduct, roughly speaking, about 40% to arrive at the present Pakistan figure in Pakistan rupees. Therefore my very rough estimate, at the present moment, would be that the Pakistan available resources, would amount to something like 140 rupees per head. On the basis of these rough figures, it would be unwise to assume that more is available.

Now against that, you have to set the announced development projects which the Pakistan Government intends to start. I have made a rough computation. These following figures cover the next five years, and are expressed in units of crores of Pakistani rupees (ten million Pakistani rupees).

Now the total of the announced development projects in Pakistan, for the next five years, is sixty nine (always crores of rupees) for civil engineering and building projects.

The second major heading is plant and equipment that is required for the development projects. The total there is about eighty crores.

The third major category of development requirements in Pakistan is materials, maintenance and repair expenditure, etc., for the projects that have been announced. The total works out at 50 (fifty) crores.

Now, that is also a very rough calculation and you will have all the facilities of checking up on this. It may be five crores too high or five crores too low. As Dr. Lund explained in his lecture, you have always to be very

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careful to make an additional allowance; quite possibly these things may cost a lot more than is assumed at this present moment. But if you add these things up very roughly, you get a figure of two hundred crores for five years. (Since giving this lecture, a figure of 260 crores for six years has been announced as the official programme under the Colomb's Scheme H. W. S.)

Now let us see what this means in terms of our discussions yesterday. Two hundred crores for five years is forty crores per annum. Since the population of Pakistan is about eighty millions, the proposed expenditure on development projects, works out at 5 rupees per head.

Now to that five rupees per head, you must make some addition, because these are only the major development projects mainly by the Provincial Government, the Central Government, and the Local Authorities which have been announced. There is, of course, a great deal of development expenditure going on that is not announced. For instance, most of the expenditure by private persons, who are also expected to spend a certain amount of money on extending productive facilities. Thus the true figure is more likely to be seven or eight rupees, because of these additions. Compare that with 140 rupees per head which we have estimated is the level of available resources. In other words, shall we say, a minimum of 4% of my rough calculation of available resources, is already accounted for by the major announced projects, the total percentage, if you add private development and development projects that are not included among these major announced projects is likely to be something like six or seven per cent. That is not an excessive figure, and on the basis of these figures, one cannot say that, up to this date, Pakistan has announced a development programme that is not feasible. With the existing resources, it should be possible to finance this programme, but it will require very deliberate financial policy to avoid inflation, because the national income is at a very low level. If you divert 6 or 7% of a low-level national income into capital construction, it is a fairly high figure. On the basis of these figures, I would certainly not say that the development programme is too ambitious. But I would say, on the basis of that programme, that there is considerable need in Pakistan to have a definite policy of financing these projects, to make sure they will not lead to inflation, and to be very careful in adding to these projects. The present programme on the basis of these rough figures, would look to me just about right—just about what can be financed with a reasonable financial policy without inflation. If you implement that development programme and implement it without inflation, during the next five years, I should say that by economic standards of development, you have done pretty well.

I want to make one additional qualification to what I have said. I have assumed that Pakistan will have to finance all these schemes domestically. To the extent that, during the five years, you receive foreign loans the pressure on your domestic finance will be reduced. That we shall discuss when we deal with foreign finance. To the extent that the burden is taken from Pakistan's shoulders by an influx of foreign capital, it would be possible to add to the development programme without changing the figures I gave you before.

Now let me repeat my warning. This is the result of a very rough calculation. I have only given you this as an illustration to show the type of calculation that one has to go through. If I were asked to write a memorandum for the use of the Pakistan Government on whether the present development programme can be financed, or what is the right financial policy to avoid inflation in implementing it, I would never use those figures—they are much too crude and much too rough. That would be a research job that would require at least a month's steady work to get the figures—to adjust the figures, to look into the meaning of these figures—to study the cost estimates of these development projects, to study the other types of expenditure in Pakistan, to get the national income right, etc. It is a first rough approach. Those of you who come from other countries will want to go through a similar rough calculation perhaps for your own country, and see how this kind of calculation comes out for your own country. May be you have been trying to do too much, or may be you have not been doing enough.

I shall now resume my main strand of thought and describe to you some of the results that follow when your development programme adds up to more than a hundred percent of the resources you can spare for it or have mobilised for it.

X Incompatibility of Inflation with Economic Development: Discussion Resumed

I mentioned already that the theory of financing development by inflationary methods has been developed in industrialized countries. It is based on conditions and on assumptions that are quite different from those prevailing in underdeveloped countries, and it would be a great mistake, a tragedy, if the economists and civil servants in underdeveloped countries took these teachings that have been developed in the United States and England, and because they are academically accepted in those countries, try to apply them in underdeveloped countries. There they are likely to do a great deal of harm.

I. INFLATION 'FORCED SAVING'?

Inflation is often defined in economic text-books as 'forced saving'. It is described as a method of getting savings out of people. The idea is that if you have inflation, prices rise, and therefore the incomes of people are cut. You can cut a person's income directly—cut his money income by taxation or borrowing, take the money away from him so he cannot spend it on consumption goods. Now some people think that inflation does the same job, because you can also cut a person's income by raising prices. That means that people's real incomes are reduced and they can consume that much less. Therefore, the conclusion is that inflation is just as good as saving or taxation—that it is only another form of saving and taxation, and that it therefore, does not make any difference how the Government finances development programmes. If it is too large to be financed by saving or by taxation—well, let the Government go ahead and finance it by inflation.

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That is a great fallacy. It is applying a very short-sighted point of view. At the present moment, it is certainly true that if you increase prices against people, the real value of their incomes is reduced. But economic development is not a matter of the moment. If you think of an economic development programme, the proper economic view point is one for five or ten or fifteen years or an even longer period.

Now from that point of view, it is certainly quite untrue that inflation promotes saving—that inflation is a form of saving. On the contrary, inflation really is a very strong discouragement to saving. When prices go up, the value of savings is deflated. Inflation is a direct encouragement to consumption as against normal saving. The real problem is to reduce consumption, to promote saving (which includes taxation), in order to finance economic development.

What people will do in times of inflation, when prices go up, is to save in other forms. They will hoard commodities, for instance, or they will hoard gold or precious metals, or they will buy land as a protection against inflation. Such things, of course, the hoarding of gold, the hoarding of commodities, the acquisition of real estate—land or buildings—in order to have a protection against inflation, all that is directly opposed to the principle of economic development. The hoarded commodities, the hoarded gold, the unnecessary buildings, the land investment absorb the resources and the funds which would go into economic development. Instead of goods that go into hydro-electric projects, transport improvement, etc., you have to produce goods and commodities in order to protect people against inflation. Similarly if people hoard gold or precious metals—which, of course, is one of the more traditional forms of hoarding in this region—there again they directly prevent you from pushing forward with your development programme, the gold has to be imported from abroad, it prevents you from importing machinery or more useful things from abroad. If the gold or precious metals are home produced, and they are hoarded by individuals in your country, it prevents you from exporting them and buying, with the proceeds, important raw materials or machinery.

BUILDING UP RESOURCES OR CUTTING DOWN PROGRAMMES?

It is a condition, which you can observe in many countries, at this present moment—that of an initial attempt to push through a big development programme, that was larger than the resources that were actually made available, for it ending in inflation. The true reason may, of course, be not that the development programme was too large, but that the resources that were made available for economic development might have been larger. Many of the underdeveloped countries may not have done everything they can to provide for development the maximum possible from their available resources. So if you observe an inflation, I do not want you to rush to the conclusion that the programme is too big. The first enquiry should be whether the resources for development in the form of taxation, borrowing or savings, can be increased. But when you are satisfied that your resources are as large as you can possibly make them, then the important second step is to make sure that your total development programme, all your projects included, does not add up to more than those resources that you have available.

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If they do add up to more than 100% of the resources that you have actually available, the right approach is not to try to make a start on it and hope for the best. If you do that, and just hope for the best, not the best but the worst will happen. The right way is to prune your development programme, to cut it down. I do not mean to cut everything down by 20% or 50%. That would just be silly. The right approach is to look at your development programme again, in the light of your smaller resources that you have available. The right thing is to sit down and think again. Draw up a new programme which may be quite different. It may be that if you draw up a programme that is half as big, you do not just leave out some projects, you may change your projects completely. The right programme of a size of 100 may be quite different from the programme of a size of 200. It is not good procedure to make a start, and then when you find your money runs out, to cut everything by 50%. That leads to a great deal of waste. The important thing is that your initial programme, before you start carrying it out, should be cut down to the size of your available resources. But that is the second step.

The first step is to make a maximum of resources available for economic development, and that is very largely a matter of organization, of administration, of taxation, of right borrowing and of encouragement of savings. The second step is to have a development programme, that is not less, but is also not more, than 100% of the resources that you have available. Any other way is wasteful. A government which has a development programme that is too large, will in the end find that the actual development, over a 10 or 15 years' period as a result of its policies, is less than it would have been, if its programme had been smaller.

The common trouble is, first of all, that not enough resources are made available for economic development, but also that too much is attempted in relation to the resources that are actually available, and as a result of that inflationary conditions develop which prevent all real development.

XI Upsetting Effects of Inflation on Benefit Cost Calculations

You will remember that, when you went through your cost/benefit calculations for particular projects, those calculations were based on certain prices. Sometimes it is possible or necessary to adjust them for future changes, but in general the only basis on which we can do calculations of this kind is to assume stable prices on the present basis. Now just realise for a moment what you do when you assume stable prices. The costs of your project will be incurred over the next 3, 5, or 7 years. The benefits from your project will even last for the next 30, 50 or 100 years. Now, therefore, if you select your project according to the highest benefit/cost ratio, on the basis of present prices, but if, at the same time, you pursue a general development policy that is bound to change your present prices to result in inflation and raise your prices—well, you see you are doing two things which are completely incompatible. That is something that does not make sense. You will never be able to select your project rightly, on the basis of cost-benefit calculations, based on present prices, unless you pursue an economic policy which makes that assumption of stable prices come true. What often happens in underdeveloped countries is that the two

groups of people who are concerned with economic development, do things that simply do not fit together. On the one hand, you have the technical planners, who go through all these calculations that you are doing now, for instance on the Thal Project, in another Ministry, perhaps the Ministry of Finance, you have a different group of people, who pursue an economic policy, to make quite certain that the results that are arrived at by the first group of people will be incorrect.

I hope you see the importance of keeping these two sides of development policy in step with each other. If you try to do too much in your total development policy, your selection of projects will also be wrong. The method by which we select projects, by which we are able to say that A is a better project than B, is completely upset, if you have a state of inflation.

FOREIGN EXCHANGE RATES

Another point that I think is very important to consider in your calculations is the foreign exchange rate. Practically all your projects will require imported equipment or imported materials, and you have to make some assumptions about the prices at which you will be able to obtain such imported equipment or materials. Also, practically all your projects will have an effect on exports and imports. Either you will produce something that you used to import and then in your cost-benefit calculations, for your project, you have to put down what the savings on that import will mean, in terms of your own money, in terms of rupees. In that case you have got to assume something about how much the imported goods would cost you.

Other projects result in exportable goods. You have to calculate again how much you are likely to get for those exports. That is not only a question of world market prices. Since you do these calculations in your own currencies, rupees, it does not only depend on what you get for your jute, in dollars shall we say, it also depends on your exchange rate in relation to the dollar. You may be quite accurate about the world market price for jute in terms of dollars or sterling, and yet, for your cost-benefit calculations, you may be quite wrong. By the time you sell your jute from your project, shall we say, the exchange rate of the rupee to the dollar may be changed, and what you get in rupees, may be quite different from what you assumed.

In other cases again, a project involves foreign loans. If you get a loan from the International Bank or any other foreign agency your commitment will be in terms of dollars or pounds sterling, or some other foreign currency. Now when you put down in your cost-benefit calculations, on the cost side, the cost of interest and amortization on that loan, you want to put it down in terms of rupees. You have got to do both sides of your cost-benefit sheet in rupees. Now, the number of rupees that you have to pay in interest on this loan depends on your exchange rate. If the Pakistan rupee is depreciated by 40 % tomorrow, then your total cost of paying interest and repayment on a loan from abroad, increases by 40 %. On the other hand, if the dollar is devalued (which looks a much less likely thing to happen at this moment), then the amount that it costs you to pay in-

terest and amortize the loan, will be reduced by that much. In other words when you draw your cost-benefit sheet, you must assume that your foreign exchange rate will remain the same

But if you fail to see that your development programme is within the limits of your total available resources, and if as a result of that you get a state of inflation, while there is no inflation in the outside world, the exchange rate of the Pakistan rupee is bound to depreciate. If Pakistan prices rise by 100%, the Pakistan rupee buys that much less in commodities, and in the long run the external value of the Pakistan rupee must adjust itself to the depreciation in internal value. If the Pakistan rupee can buy that much less in Pakistan, you cannot expect foreigners to pay the same amount for the Pakistan rupee in their own currency as before. The exchange rate of the Pakistan rupee will fall. That has been the universal experience of the countries which have tried to undertake development programmes, in excess of their available resources. The inevitable result of that has been exchange devaluation and that inevitably upset all their cost-benefit calculations. If you undertake this Thal Project now, on the basic assumption that you will get all the imported equipment at present prices in Pakistan rupees and then just before you start getting your equipment, you devalue the Pakistan rupee by 25% or 40%, all your costs of that equipment will be 25% or 40% greater than your figures. Your whole calculations may be upset.

Your calculations are made on the basis of existing exchange rates, because you cannot guess how foreign exchange rates are likely to change. If you know of an impending change in exchange rates in advance, then of course, it is right to take that into account in your cost-benefit calculations to work it out on the basis of the new exchange rate, not on the old exchange rate. But if you have a condition of continuous inflation and therefore continuous exchange depreciation, there is very little point in trying to calculate the benefit/cost ratios for a particular project, because, in the end, it will all be quite different from what you calculated. The only way of making sure that your present calculations are accurate is to keep your exchange rate reasonably stable. And the only way of making sure that you can keep your exchange rate reasonably stable, is by pursuing development policies that do not result in inflation. And the only way of preventing inflation in the course of economic development is to make sure that your development projects are within 100% of your available resources. Thus we come back again to the same result. The right approach to these problems is, however, not to stop having these cost-benefit calculations because they may all be upset by inflation and changes in exchange rates. These cost-benefit calculations are very useful. But they can only be useful on a background of avoiding inflation. That is the point I want to stress.

You can be more certain of the cost of domestic labour, of what your wage cost shall we say, of constructing a dam will be in 3 or 5 years' time, than of what the cost of imported machinery will be. If you deal with the cost of domestic labour, generally speaking you have only one unknown to deal with, and that is the general price level. But if you deal with the cost of imported machinery, you have two unknown factors to deal with. The one is what this machinery will cost in five years' time in terms of dol

lars, the second is what the dollar will be worth in terms of Pakistan rupees. Instead of making one guess you have to make two guesses. No one could have ever forecast the changes in the exchange rate of the pound sterling over the last 30 years. What has happened since 1920? There has been one big appreciation of the pound sterling in 1925, when the pound sterling was returned to the old gold standard parity, then three big devaluations, one in 1931, another one in 1939 and another one in 1949. Who could have forecast that in 1920? It would have been utterly impossible for any one to do that.

DISRUPTING EFFECTS OF INFLATION ON THE EXTERNAL BALANCE OF PAYMENTS

There are a number of other reasons which lead to the conclusion that underdeveloped countries should not try to attempt an excessive development programme, excessive in relation to the resources that they have made available for development, and in doing so rely on inflation. The first point I want to add to what I said before, is that once you are forced into an exchange depreciation as a result of domestic inflation, such exchange depreciation is usually a very bad thing for an underdeveloped country, because it makes matters worse, rather than better. An exchange depreciation can be a very good thing if it helps you to improve your external balance of payments, if it increases the receipts from your exports and if it reduces your expenditure on imports. But in the case of underdeveloped countries, the situation usually is such that an exchange depreciation makes your balance of payments position worse, it does not make it any better. You get something very much like a vicious circle in exchange depreciation. If the Indonesian currency, shall we say, is depreciated, that is to say more Indonesian units for each dollar, then Indonesian exports of rubber become cheaper in terms of dollars. That means you are getting less dollars than before for each unit you sell. Now that is alright, as long as the quantity of what you sell increases sufficiently to compensate you for the fall in the unit price of what you sell. Whether exchange depreciation helps you in your balance of trade position, depends entirely on whether the expansion in sales quantity will compensate you for the drop in prices.

Now underdeveloped countries are in a very peculiar and unfortunate position in that respect. What they export, is known as primary commodities, that is to say food and raw materials. In fact that is the definition of an underdeveloped country. An underdeveloped country is a country which exports food and raw materials, and imports manufactured products. Now the demand for food and raw material is what the economists call "inelastic". If the price of what you have got to export, whatever it is—Pakistan jute or tea or cotton or Burmese tin or Malayan tin or rubber, is reduced, you can be pretty certain, that you will not get back in increased quantity what you lose in your diminished price. There is no great expansion of demand. The main reason for that is that a raw material like rubber is not a finished material and therefore it forms only a very small part of the total value of a finished product. For instance the main use in which rubber is consumed in the U S is in motor car tyres. Now the total value of the rubber in the finished price of an American automobile

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is shall we say 5%. Therefore if the price of rubber is reduced by 50%, the cost of the automobile is only reduced by 2½%. That is all the difference it makes. Therefore your demand will only increase by 2½% or thereabouts.

That is the general position with your articles of export, so far as they are raw materials. Of course, it works in your favour when it is a question of a price increase. When the price of what you export increases, the demand is not very much reduced, for the same reason. But in the case of an inflation in your country, it works against you.

The same is true in the case of exported food. If the price of food falls, people will use the extra money that they save to spend it on manufactured articles. If the price of food in the U. S. or England or other industrialized countries falls, that means better markets for their industries, rather than better markets for farmers.

Thus, an exchange depreciation, which is the result of domestic inflation resulting from excessive development programmes, is likely to make your balance of trade position even worse and then you have to have another exchange depreciation. If your export proceeds fall and therefore you do not earn enough foreign currency, your own currency is undermined again, with the result that you have to depreciate it again. One exchange depreciation may be followed by another. There is no limit to it, once you start.

LOSS OF CAPITAL

When that happens, you get capital flight. People will take out their capital out of your country, because if your currency goes on depreciating, you can always make a profit by keeping your money abroad and then buy back Pakistan rupees. You will get more rupees later on. The private investors, instead of investing their money in Pakistan's economic development, would try as far as they can to take their money abroad. That, of course, is very bad for economic development. You may be able to stop them from doing it by rigid exchange controls. But first of all, control of capital flight is never 100% effective. And secondly, the mechanism of control may cost you a great deal. You may have big government offices which are busily engaged in checking on capital flight instead of promoting economic development.

If you have domestic inflation and depreciation of your currency, exporters will try to keep abroad the dollars, or other foreign currencies, which they earn. Instead of getting machinery and useful raw materials in return for your exports, you have a tendency for your exporters to keep their money abroad. You can have laws which force an exporter to declare his export proceeds to the National Bank. But again these provisions are never 100% effective. If the exporter is absolutely determined to keep some money abroad, he will usually be able to do it. And again, the control machinery that is required may be very heavy, and it may also be harmful to international trade. If there is a heavy control mechanism, people will be discouraged from exporting altogether. Then you will get a condition where your exporters will prefer to sell in your home markets. They will not be interested in earning foreign exchange, if they are subject to these detailed controls. Then your problem may be that you do not earn

enough foreign exchange to buy machinery for development, because the exporters have lost interest, due to all these controls. You see how you move from one trouble to another

XII 'Underemployment' and Inflationary Finance

There may be one particular circumstance in the conditions of underdeveloped countries, which would give a certain place for inflationary measures in economic development. That is the condition where you have unemployment, or hidden unemployment, in underdeveloped countries. Generally, of course, in underdeveloped countries, the limitations on increasing output are technical, absence of capital, absence of machinery, of factory capacity, of public services and so forth. But a 100% distinction like that is never quite accurate. There are conditions in underdeveloped countries which are similar to those in industrialized countries. For instance take India. India has a quite appreciable volume of urban unemployment. Then again, there is also agricultural unemployment. There may be many people on the land in agriculture who have nothing useful to do, during the particular season of the year. You could describe that state of affairs as seasonal unemployment in the countryside. Then again you have an increase of population, a pressure of population on the available land, like in both parts of Bengal, and many other areas. If there are three people trying to till an amount of land, that could quite well be tilled by one single person, than only one person of these three is really fully employed. The other two are unemployed.

Therefore you could argue that if there is a proper organization, you could utilize these unemployed resources to increase output. If you only have a demand for their services, you create additional supply, as far as labour is concerned, although not in other respects. The possibility for increasing output is there. There is no technical limitation, there are sufficient people, there are idle people. In so far as the development programme of a country is deliberately adjusted to make use of this seasonal or rural or urban unemployment, for instance to build hospitals or to improve the village water supply or to build roads, drainage canals, irrigation or whatever the case may be, I should admit that there is a case where inflationary methods of finance might be considered. In that case, your resources would increase at the same time as your expenditure increases. But people building a hospital still need building materials. To the extent that you need things other than labour, which are in short supply, you still have to be very careful in fitting in your development programme with your available resources.

In agricultural countries, if you want to increase your output rapidly, that usually means agricultural output, and in the end it all turns on what your farmers intend to do. Are they willing to put in more labour? It does not follow, in the case of farmers, that the ordinary inducement of a higher price will do the trick. In your projects, it would be very unwise to assume that if you only offer a certain price for food crops, you will get a certain surplus. If farmers are more prosperous, the natural reaction is to consume more, and your surplus may be the same as before. It may even be less. If the farmer gets the same amount of cash, sufficient to pay his seasonal labour and to buy his clothing or bicycle or whatever the

expenditure may be, by selling a smaller quantity, because the price goes up well he may sell *less* than before. The farmer may decide to increase his leisure. Instead of taking out the benefit in the form of more cash, he may take life a little easier. He will say that I do not now have to plough that particular field, because from the rest of my land, I will be able to make a cash income that is big enough for me. All that adds to the difficulty, that I mentioned previously, of increasing output in underdeveloped countries merely by spending money. Development is more than just spending money.

But I hasten to say that, even in the cases that I mentioned, you must still be very careful about the financial effects of the way in which you organize your development programme. There are two ways of organizing this rural unemployment or urban unemployment into production without inflationary effects. The one is by unpaid labour, when you get rid of money altogether. If you organize it on a monetary basis, you have to take into consideration the time lag between the increased incomes and the increased output. Perhaps you could pay the extra wages on a delayed basis. If that is possible in your financial system, to make certain that those extra incomes will not be spent, until the improvement in output, through your better health conditions, has materialised, then you are right. You must adopt one of these two ways, either getting rid of money altogether, or making sure that the money that you spend now will not appear as demand until the increased flow of goods is available. But the general rule quite definitely, is that you got to provide the resources beforehand, before you start on your development programme. Otherwise you are likely to get inflation.

You see all the time how little sense it makes for a technical planner to say, "I am not interested in these general economic.—what is that to me — inflation, development programmes — I am interested in this particular project, I am interested in the Thal Project, I do not have to worry about inflation", etc. That attitude does not make sense. Even the technical planner, if he wants to do his calculations for one single specific project, cannot fail to take into consideration matters that are right out in the field of general economics, such as inflation, exchange depreciation, etc., because they have a direct effect on his cost-benefit calculations. You may believe that you keep away from general economics, but you are not, if you add up these costs, and you do it on the basis of the present exchange rates, you are making some assumptions about what happens in the field of general economics, namely, that the present exchange rate remains the same. But the general experience in many underdeveloped countries (though perhaps in Pakistan and India less than in any other underdeveloped country), is one of fairly continuous, fairly steady inflation at home and exchange depreciation abroad. Development projects which have been started thirty or fifty years ago, on the assumption of steady exchange rates, may have been completely upset as a result of this constant inflation and exchange depreciation.

XIII Inflation and 'Self-liquidating' Projects

THE GENERAL RULE . REPAYMENT IN MONEY INSUFFICIENT

Let me now go on to another point which I also feel is of great importance and which is related to what I said just now. When you go through your

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costs/benefits calculations, you assume that your project must be self-liquidating, that is to say the benefits from your projects must repay the money that you put into it, in gradual instalments depending on the probable life of the project, and also carry an interest charge on the money put in. That approach raises a number of economic problems which we shall consider later — whether projects should be self liquidating or should not be self-liquidating. But look at another point now, arising out of inflation.

Assuming that your project must be self-liquidating — what does it mean — self-liquidating? What you do in your calculation is you repay your project in money — in Pakistan rupees. You say, I have put a million Pakistan rupees — ten lakhs of rupees — into this particular project. Therefore, if I collect back that ten lakhs of rupees from this project over the next fifty years, and if in addition to that, I collect 4% interest on this ten lakhs of rupees, then I am alright — then I have “got my money back”. Well, is that true? Does that make sense?

It only makes sense if that ten lakhs of rupees that you get back with interest at the end of your thirty or fifty years, or whatever the life of your project may be, represents the same value in real resources. You see, if you are the Government, undertaking a public development project, you do not want “your money back”. The Government does not think in terms of money. The Government thinks in terms of real resources, of real capital, of labour, of raw materials. What the Government must insist on getting back from the projects, if they are self-liquidating, is not a certain amount of money, but the value represented by the resources that have gone into this project. You do not just want to get ten crores of rupees back from your Thal project or whatever it may be — what you want back is sufficient money to spend on another project in thirty years’ time that is equally important, in terms of equipment, labour, etc., to replace the project which you have liquidated. It may be you want to rebuild the same project or it may be you want to lay down in another project. But you would not consider yourself as having come out with a self-liquidating project, unless the money you have collected from your first project can buy sufficient resources to replace the resources that have gone into the first project.

Now you see what you have been doing in your cost/benefit calculations. You have assumed that prices will remain the same because you have always argued so far in your approach to a specific project, “If I can only collect the money back that I have put in, *plus* interest, then I’ll be alright — then the benefit covers the cost.” That is true if the prices you pay in fifty years’ time on the next project are the same as they are now, because then if you collect the money back you can buy the same volume of real resources all over again. But if you follow the method of inflation during the fifty years, by having a development programme that is in excess of your available resources, then there is no point in collecting the money back — you should collect a lot more back. You may collect your ten crores of rupees from your project, but if your prices have doubled in the meantime, your ten crores of rupees is only worth five crores of rupees. Therefore, you may be under the illusion, on the basis of your calculation, that your project has been self-liquidating, but in fact it has not been self-liquidating.

In other words, when you go through your cost/benefit calculations, you make the assumption that prices will remain as they are. Now if

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your assumption is wrong — supposing you find after five years that prices are 25% higher than they were when you started, you have got to revise all your calculations. It is no longer sufficient, from a real economic point of view, to collect back your ten crores of rupees. If your prices are 25% higher, you have got to collect back 12½ crores. Unless your project does that, it is not self-liquidating.

That is another point where inflation and change in price has a great effect on your appraisal of particular projects. For instance if I see the cost/benefit calculations of particular projects and it comes out about even and if at the same time I know from my general economic studies that the country is pursuing a strongly inflationary policy, it has no proper taxation system, it has no developed market for borrowing, its people do not save while it has ambitious projects — well, if I know that, I would not accept this cost/benefit calculation as proof that that project is self-liquidating. I would want some provision made in the calculations for the degree of inflation over the life of the project. Or, to put it the other way around, you can only really put forward your cost/benefit calculations with any degree of confidence, if your Government avoids inflationary development policies.

EXCEPTIONS TO THE RULE: FOREIGN FINANCE

That is a very important point in development planning, but having made that general point, I want to give you now some exceptions from this general rule. What I have said now, is the general rule which applies to a Government which undertakes a public development project at home with domestic finance. But now about projects financed by borrowing from abroad? In that case, you may not have to worry about changing price levels, as far as your own country is concerned. All that your lender wants is to have their money back. The risk that the money may be worth less when you repay it, than it is now, is not your risk, in that case. Supposing you borrow a hundred million dollars from the United States now to undertake a certain project and you repay that money over the next thirty years — well, it is possible that a dollar in thirty years' time in the United States will only buy half of what it buys now. But that is not your worry, that is the risk of those people that have lent you the money. That is their risk. They will be satisfied if you pay one hundred million dollars back. In the case that your money comes from abroad, you can work it out in terms of money. As long as you pay the money back — you are alright. Then you do not have to worry about real resources. The principle that I just established, relates to that part of your development that is domestically financed.

DOMESTIC BORROWING — A DOUBTFUL EXCEPTION

Another case which is also to some extent exceptional, is where you borrow money from your own private investors. Supposing your private investors at home subscribe money for a Government bond to finance the Thal project. The Government issues, shall we say, colonization bonds

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to help finance the colonization part of the Thal project. Private Pakistan investors will subscribe the money, banks, or individuals. Now these individuals have undertaken a risk. They say, 'we are going to lend our Government money at 5%', and they are satisfied to get the same amount of money, *plus* 5%, back in ten years' time, or whatever the duration of the loan may be. Now again, these private individuals have undertaken a particular risk. When they get their money back, it may be worth very much less than it is now. They may subscribe 100 rupees now, they may get 100 rupees back with interest in ten years' time, but that 100 rupees may only buy as much as 50 rupees buy now. But again, from the point of view of your Government, the risk has been taken from your own shoulders, to that extent you can be satisfied with liquidating your project in terms of money. You do not have to worry about real resources.

This second exception, however, is much more doubtful than the first. The Government cannot just take the line: 'Well, as long as we repay our 100 rupees, we have fulfilled our contract with those people who have subscribed money to finance our development.' This may be legally alright. If a private person gives you money and says, I'll be satisfied if I get my 100 rupees back, you can argue that he knows what he is doing. He undertakes a certain risk, and if he gets his money back in depreciated rupees, well, that is his look-out. But it is very difficult for a responsible Government to take that line. It is not an act of good faith. If a Government borrows money for the initiation of a development project, I think that Government is at least under a moral commitment to repay in money that is not depreciated. Otherwise, the Government is not really, in the economic sense, fulfilling its commitments.

There is another point to consider. In underdeveloped countries, you want to strengthen the willingness of people to save and to subscribe to Government bonds for economic development. That is a very desirable thing. The more you can finance in that voluntary way, the better. But you cannot expect private people to go on lending you money in that way, or to go on saving, if there is a constant process of inflation in your country. There is a saying that you can fool some people all the time, and all the people some of the time, but you cannot fool all the people all the time. In the long run, if this goes on, your private individuals will wake up to the situation. They will discover that they do not really get their money back. They get back pieces of paper with the same thing printed on them as when they handed it over to finance development, but really those pieces of money are not worth what they should be worth. You cannot expect, in the long run, to go on shifting the risks of changing prices to your lenders — even at home — without undermining their willingness to lend you money for future development projects.

Therefore, a number of suggestions have been made, that Governments of underdeveloped countries should protect their savers and their investors against these changing prices. There is almost automatically a tendency towards inflation in underdeveloped countries because their needs are always so much greater than their resources, and their needs tend to reflect themselves in development programmes that are greater than the available resources. But, on the other hand, you want to strengthen people's willing-

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ness to save. Therefore the suggestion has often been made, and in fact that is one of the recommendations that the Economic and Social Council of the United Nations at its last Session in Geneva made to the Governments of underdeveloped countries, that they should consider methods of protecting their savers against depreciation of their savings due to inflation. In other words, the suggestion was that Governments might put the interest which they pay on a sliding scale if the prices go up. If the prices double, they would have to pay twice as much. There is a good deal to be said for this suggestion. If your saver gives us his money — if it is a voluntary transaction — he acts in good faith, and it is not good faith to return him his money in values that are very much less.

Of course, it should also work the other way. Supposing you make tremendous technical progress and you follow a very austere financial policy (perhaps after studying these lectures), you have a terrific budget surplus, you tax very heavily and as a result of that, your prices fall. Then, of course, your saver would really get back more than he is entitled to. If your saver is sure of a return that always buys him the same quantity of goods that he gave to you, the idea is that that would strengthen confidence in money, confidence in banking and the willingness to subscribe money for development. Now, conditions in each country differ very greatly, therefore, you cannot apply that principle rigidly to each particular country.

XIV Excessive Development Programmes and Economic Efficiency

Now let me add a little more to the warning that finance of economic development by inflationary methods will defeat its own end. When you have this inflationary condition, on account of development programmes that are too big for the resources made available for them, one of the things that you will invariably find, is that people make easy profits. If prices go up all the time, you do not have to be very efficient to make a profit — every thing goes up. If you own stocks of goods, as a farmer or dealer or producer or hoarder, you make a profit while you are asleep. You need not do anything at all, you need not make any contribution to economic development. Next year as prices go up, you will be that much richer in terms of money. As a producer, you can always make a profit, because you produce things now, you pay wages and buy your machinery at present prices, while you sell your goods in two or three years' time when prices are much higher. You have made a profit, and there is nothing to it. You do not have to be efficient — anyone makes a profit.

Now that, as you will certainly see, is a very unhealthy condition in underdeveloped countries, where the great objective is to increase efficiency, to increase productivity. The best method of economic development as I have stressed before — especially in the early stages — is not necessarily big capital projects which cost a lot of money. The most effective method might be to increase the efficiency of what you have already got. Before you add to your capital, it is wise to ask yourself whether you are already making the best possible use of the capital that you have already

got. That means efficiency in production, whether the factory is a Government factory, whether it is a private factory or a mixed factory, a public corporation, or whatever it may be. It makes no difference. If you follow an inflationary policy, you destroy all possible incentive that your producers could have—farmers, industrialists or whoever they are. Why should your producers be efficient? They make money in any case. Real inflation throws easy money into the lap of all producers. It destroys their incentive to reduce their cost—to sit in the evening after office hours and figure out whether they could not introduce an improvement here, save some cost there. When everyone makes money, there is no need for competition. They can all live and let live. They are all a happy band of brothers. In those underdeveloped countries which have gone through a period of inflation, especially where that inflation has been chronic, you can put your finger on those particular things that I mentioned. The producers do not worry about whether their plants are efficiently laid out, or efficiently operated, whether they could not improve them, because they are making easy money. Those countries would be much better off in terms of output and production, if money-making were not so easy.

It is never, a good policy to make money-making too easy. I have always stressed in these lectures that desirable private enterprise which fits into a development programme, should be encouraged. A Government should never forget that the public development programme that it undertakes, is not an end in itself; it is meant to serve for private production. I am now talking of countries that have private development. But it is quite wrong to throw money indiscriminately at everyone who cares to make it, by having a process of inflation. That is not what I call desirable encouragement of private enterprise. That does not help your development programme. That destroys your development programme.

XV Inflation and the Nature of Investment

There is one remark that I want to add about inflation as a result of excessive development programmes or insufficient available resources in underdeveloped countries. It concerns its effects on the nature of investment.

We may distinguish three types of investment. One is very short-term investment, that is to say when you expect to get your money back within a year. For instance, investments in commodities. If you build up stocks of commodities because you expect prices to go up and you can sell or use them in a year's time—that is short term investment. The second type of investment is medium-term investment, where you expect to give your money back in from between 2 and 12 to 15 years. The third type of investment is long-term investment. For instance, practically all house building is a very long term investment.

Now what I want to point out is that inflation in an underdeveloped country favours short-term investment, and inflation also favours very long-term investment. But the essence of economic development, the main method by which economic development is promoted is medium-term investment. Practically all investments in directly productive facilities are of the

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medium-term type. The most desirable contribution to economic development is made by people who invest their money, shall we say from 5 to 20 years but with the intention of continuous operation, and expect to have to replace their facilities, within that medium period. Practically all investment in factories or industrial development generally is of that kind, as well as much investment in agricultural and transport equipment.

Now that type of investment is very heavily discouraged by inflation. The short term type of investment, which generally speaking does not add very much to economic development, is not discouraged by inflation. You make quick profits, you make easy money and you don't want to replace your stocks of goods. You do not worry about replacements, because that is one speculation that is finished, there is no sense of continuity, you think of something else to do with your profits.

At the other extreme, very long-term investments, that last for 80 to 100 years, like house building, for instance, also are not discouraged by inflation. On the contrary, they are encouraged. If you have a house, or you buy up agricultural land, that lasts you for ever. You do not have to worry about replacement. Who worries about replacement costs in a 100 or 200 years? It is a matter not for yourself, it is a matter for your great-grandchildren. No matter how strong your family feelings may be, I do not think that anyone of you could have spent sleepless nights worrying how his great-grandchildren are going to replace the cost of the house in which you are now living. At the same time, you are protected against inflation, your land or building is a real asset. Therefore, inflation benefits you.

DISTORTION OF DEVELOPMENT PROGRAMMES BY INFLATION

What you invariably find in under-developed countries which adopt inflationary methods of financing economic development, is that their development activities become lopsided. You find a heavy stress on these short-term speculative investments on the one hand, and buying up of land and real estate construction and other very long-term investments, on the other hand. But you find a great neglect of medium-term investments, directly productive investment projects. Now, unfortunately, it is just those projects that are the most useful for economic development. These countries do not promote their economic development by that policy. But these policies are almost the inevitable result of inflation. People will do what is profitable for them. And inflationary conditions make most profitable for private investors the things that are least desirable for your economic development. If you have private enterprise, you can never have a satisfactory development programme without also satisfactory programmes in the private sector, you will never get that in a state of inflation.

XVI The Case for Formulating more Projects than can be Executed

Well, we are now finished with inflation and I want to make a point, which I feel is very important and which may seem, at first sight, to be contradictory to what I have been saying just now. But I hope you will all see quite clearly that it is not really contradictory. So far, what I have said is that no country should try to execute a development programme which is in

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excess of the resources made available for it. The point that I want to make now, is that each underdeveloped country ought to have a development programme that is greater than its available resources. In other words, the distinction that I want to draw is between the programme that you actually execute, and the programme, the number of projects, that you have ready for execution. You must always have more projects ready for execution than you can actually execute, with your available resources. You should always have a reserve collection of projects, that you know you cannot execute with your available resources and that you are not trying to execute, but that you should have carefully worked out in detail. That is to say that I do not want to draw the conclusion from what I said before, that you should not formulate projects, if they are not compatible with your available resources. Now let me tell you four main reasons for this.

FOUR REASONS

(a) *Contingencies*

1. You will all be aware after our discussions and field experience that your first project, on the top of your list, may get stuck. You may not be able to get the machinery. For instance, you will remember that at Rasul you were told that much of the work had been stopped for two or three months because they were waiting for some item of equipment from Belgium. Well, these things may always happen and then it is important to have some other project that you can substitute. Well, that is an obvious point which I need not elaborate.

(b) *The 'multiplier' at work*

2. A second reason is that your available resources will increase in the course of your development. That is what development means first to assess your present available resources, but then to increase those resources, so that in 2 or 3 or 5 years' time you can do more. It would be very wrong to be so careful in avoiding inflation, that you do not prepare any more projects than you execute, and therefore when your resources increase, in 2 or 3 or 5 years' time, you are without projects to utilize your resources. Since your resources are expected to increase, if your development policy is successful, you should have already projects prepared for this expected increase in your resources. A good development programme does not only consist in saying "I want to increase my resources, in three years' time, by 20%". That is not sufficient. You must also give some thought now to the problem: "What am I going to do with those increased resources in three years' time when I have them?" In this matter of increasing resources, you have what is known in economic language as a multiplier at work. Those of you who have studied economics will know what that means. The multiplier effect is a condition where a change, say by 1 %, in one factor, causes a much bigger change, say by 10 %, in another. Now I want you to see quite clearly, that there is such a multiplier between the increase in your total available resources and your resources that are available for new development. If your total available resources increase by 5 % the resources that you have available for further development may well

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increase by 20%, 30 or 50%. I hope you all see why that is so. To illustrate the point, I will give you a very simple numerical example.

If your total resources are 100 and from that 100 you utilize 95 for necessary subsistence, state administration, defence and replacement, you have only 5 to put into new development. That is the position in many underdeveloped countries to-day. Supposing your resources in three years' time are increased to 125. If your other expenditures could be kept at 95, you would have 30 left for new development. Your resources available for development have increased, not by 25%, but by 600%. You see how the resources that you have available for economic development may increase much more rapidly than you think. It needs a comparatively small increase in your total resources, to multiply the resources that you have for more economic development. Therefore, a good economic development programme may speed up very rapidly as you go along. It is very useful to have a reserve supply of projects, to take account of this possible rapid increase in the resources. You must think of your present available resources as a limitation on your development programme that can be executed. But you must not think of your present available resources as a fixed quantity for all future. It should be a rapidly expanding quantity, if you can prevent consumption from absorbing the whole increase immediately.

(c) Under-estimation of present resources

3. The third reason which is similar to the second is that it is always possible, that you may under estimate your present available resources. They may be supplemented by foreign aid or in other ways. You can never be quite certain what your available resources will be. I stressed strongly the need for knowing your present resources, and that is why I said that the development of national income statistics and all that it involves is an essential precondition for formulating a good development programme. Without that you are just acting in the dark. You may do too much, you may do too little. You cannot tell. But, of course, there is always a margin of error in these national income statistics. It may be that you may get more foreign loans than you count on now. It is also possible that there may be a big boom in the price of jute and that again increases your available resources. The most uncertain factors, in these matters are the foreign capital and the prices of your export products on the world market. The prices that you have to pay for your imports are also unknown factors and they have been known to change very rapidly. For instance, a country that relies mainly on rubber exports, and has made its calculations on the basis of rubber prices before the Korean war and did not have reserve projects, would have been caught completely unprepared now. They would have had much more resources than they expected and they would have no development project prepared to put them into.

(d) Alternative projects necessary for project appraisal

4. My fourth argument is the most important; it is of a general economic nature. There is in economics a principle known as 'opportunity costs'.

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What does opportunity costs mean? When you have your cost benefit calculations for your development project and you say 'it will cost me 20 million rupees, or whatever it may be, to irrigate 2 million acres of land'; what do you mean when you say that? 20 million rupees means nothing to the economist who thinks in real terms. You cannot live on money. Money stands for something else. It is a symbol. Now for what is money a symbol? Money is a symbol for what money can buy. When you say it costs us 20 million rupees, what you really mean is "This irrigation project, costs us the things that we could otherwise buy for 20 million rupees, which we have to sacrifice." Your cost of one project is the sacrificed opportunity of undertaking another project. That is your real cost.

If an economist is sent out to study the development of a country, probably some one will come along and tell him, "We have this project, we reckon it will cost us 20 million rupees to do it. Is it worth doing?" Well that question to me is completely meaningless. My question would be, "What would you do with those 20 million rupees if you did not spend them on this project?" It is only then that you can begin to study, whether that project is the best thing the country can do with the money. You cannot tell that a project is good or bad by looking at a money figure. You can only compare different projects.

The only question that makes sense, is, "Is that the best thing that we could do with our 20 million rupees?" That question makes sense. But to answer it, you must know much more than the project. You must know what other projects would be undertaken with the 20 million rupees, if the first one is not undertaken. In other words, you can never appraise the economic development programme of a country or the value of its executed projects, unless you also study other projects which that country has contemplated but not executed, and can compare these two sets of projects. That, of course, also applies to the government of a country. The government can never be certain that it executes the right project, unless it has also considered a number of other projects and rejected them. *You must always have rejected a project or a number of projects, to be certain that the project that you actually undertake is right.* That is a very important principle, in economics generally and in development programmes particularly.

In other words, if you try to draw up a development programme you must not say "Well, we have Rs 140 per head. That means we should not spend more than 250 crores of rupees on development for the next five or six years because otherwise we will get inflation. We have already 6 nice big projects here which will cost us 250 crores of rupees and that is all we can afford. So we do not have to look at any other project. Our development job is finished. Let us go ahead." I hope you see now that this is completely wrong. If you proceed in that way, there is no telling at all, whether the six projects which you undertake are the best way of spending your money. In other words, if your total available resources are 250 crores and you want to make certain that your development programme is right, you got to prepare projects, and look at them in detail, that add up not to 250 crores, but perhaps to 750 crores or 1000 crores of rupees. But you must not try to execute them. That is the distinction that I want to draw. If you come to study conditions in a country, in your country or any other country, you ask "what projects have you prepared?"

and you find that the projects prepared are only the projects that are actually being executed—you can be pretty certain that the development programme of the country is wrong. It would be only by a miracle that you hit on the right project, without studying a number of other projects. Sometimes some one from an underdeveloped country tells you with great pride: "We have been very careful in avoiding inflation. We have read all the economic literature on the subject. We are deeply impressed by the dangers of inflation. We have read all the recommendations to avoid inflation and we are proud to tell you that we have adjusted our projects completely to our available resources and we have not formulated any more projects than we can execute." Well that is a sad moment, because that is completely wrong. That is not the idea at all. The thing to do is to formulate many more projects, but to execute only what you can square with your available resources.

XVII 'Opportunity Costs' and the Interrelation of Projects

I think the point that I last put forward, is important to remember. The costs of a development project are the sacrificed benefits from another project. The costs of project A are the benefits of project B, which you do not undertake because you undertake project A. In other words, in economic development there is a very interesting relation between costs and benefits. That is another reason why your cost and benefit calculation must always be in identical terms, in money terms in your own currency. Otherwise you cannot compare. In order to compare the benefits of project B (which you sacrifice) with those of project A (which you get) you must be able to compare directly. Otherwise, all this scientific cost/benefit approach to economic development does not make sense. Furthermore, the benefits of project A are also the reduction of cost or increase of benefits of project B. That is what I called the cumulative force in development. That is for instance, the economy of multi-purpose river development. If you have one thing, shall we say irrigation, it may be possible for you, without much extra cost, to have a second scheme of navigation or flood control, or power or starting up fisheries, etc. If it becomes possible and cheaper for you to have a navigation system because of irrigation, it is absolutely essential that the reduction in the cost of navigation is taken into consideration as one of the benefits of the irrigation scheme. Otherwise your whole reckoning is wrong.

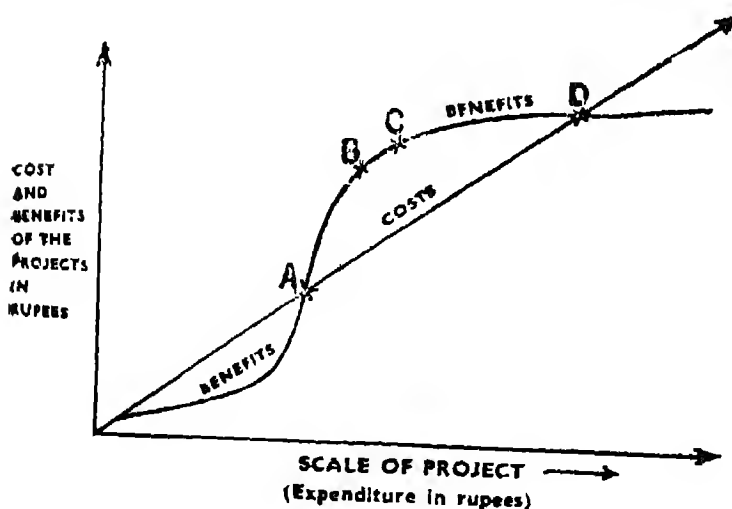
The cost of project A are also to some extent the cost of project B. If you incur certain costs for building a dam for irrigation purposes, that dam will also be part of the cost of your electricity scheme, and you are faced with the problem of spreading your costs over the two projects. One of the great problems in cost/benefit calculations for economic development is this problem of joint costs. If you have this cost for multipurpose development, how much do you put down against your electricity, how much do you put down against your irrigation purposes, your flood control project, your colonization project? Many cost items are joint costs. If you just set it all down against irrigation, that would make your hydro-electricity scheme look much more promising than it really is. If you put it all down against hydro-electricity, than your irrigation scheme looks much more beneficial than it really is.

There are three points to consider when you have a project. How far are the costs of my project the sacrificed benefits of another project? In other words, what would I do with this money if I did not undertake this project? Unless you can answer that question, you cannot appraise this particular development project. Never confine yourself to the project that you are actually starting. The second question is, how far does this particular project that I undertake here, reduce the cost of some related project? In other words, how far have I got a condition of joint costs? The third question is 'How far are the benefits of my particular project part of the costs of some other project? In other words, how far is the particular project, that I undertake here, a segment of a bigger project? How far does one thing lead to another and then how does my benefit cost calculation come out with the various segments of this big project, this combined project that I am undertaking?

XVIII Determination of the Site of Development Projects

This principle of "opportunity costs", of alternate projects, of "What do they know of a project, who only a project know?" Has another important application. It helps us to determine the best size or scale to which specific development projects should be taken.

This point may be illustrated with the help of the following graph :



In this graph as we increase the scale of the project, i.e., as we move from left to right, at first the benefits are less than the cost, until we reach point A. While there are some projects, such as provision of improved tools, better seeds, fertilisers, etc., which can be undertaken on a small

scale, yet in the type of project involving major capital outlays—with which we are here mainly concerned—the general picture will be that projects will be uneconomical if they are undertaken on a very small scale. Point A is the “break-even point”, i.e., the point where the cost of the project will be repaid, or where the benefit/cost ratio rises from below one to one. Point B is the point at which the benefit/cost ratio is at a maximum, shall we say 1.5. Point C is the point at which the total net benefits, i.e., the excess of benefits over cost, is at a maximum. This point is always to the right of point B, indicating a larger scale of project. The reason for that is that even though the benefit/cost ratio may be gradually declining, say from 1.5 to 1.45 to 1.4, etc., and we get less and less return for every additional rupee which we spend, yet at the same time the total benefits are still increased because of the increased scale on which money is spent. Beyond point C, the total net benefits begin to decline, i.e., additional outlay on the project fails to secure an *additional* benefit/cost ratio of more than one. At point D, there is another “break-even point” where the *total* benefit/cost ratio or the project as a whole has fallen back to one. Beyond point D, it declines to less than one.

The question to be answered is “What is the best scale for particular projects within an economic development programme?” Our previous discussions will help us to answer this question and to avoid errors which are frequently made, not excluding some of the technical literature on the subject.

It is obvious that no project will be contemplated at less than the scale indicated by point A or more than the scale indicated at point D. The project on such a small scale or such a large scale would clearly be uneconomical.

It should, further, be clear that the minimum size of the project, if undertaken, at all will be B. If the project is worth undertaking on a scale somewhere between A and B, it is surely even more worth extending to the scale of B, since this further improves the benefit/cost ratio.

However, it is a widespread view, and one that at first appears plausible, that every project should be extended to the scale indicated by point C, and that our objective should be to maximise our total net benefits, i.e., the excess of total benefits over our total cost. This view is indeed widely propagated. Our previous lectures, however, should help us to see that and why it is a wrong view.

It is true that as we extend the scale of a project from B to C, we obtain a benefit/cost ratio for our additional outlay which is greater than one, even though it may decline from the maximum figure reached at point B. However, although the benefit/cost ratio on the extension of the project from B to C is greater than one, it may very well be less than the benefit/cost ratio obtainable by spending the money on some entirely different project, Y, instead of extending our first project, X, from B to C. In other words, it will only pay to extend project X from B towards C if we have no other project under consideration on which a greater benefit/cost ratio greater than 1.45, 1.4, 1.35, etc., can be obtained. Project X should only be extended to point C if it is the only worth-while project in the whole economy,

in the sense that no other project has a benefit/cost ratio greater than one. That will be a very rare and practically non-existing situation

Should the project then be confined to scale B? It would be equally wrong to conclude so. The benefit/cost ratio obtainable by extending project X beyond the scale B, even though declining from its maximum, may very well be higher than that obtainable by spending the money on different projects, Y or Z. Thus it would be equally wrong to say that the project should be confined to scale B.

The true answer, and the result of our discussion to-day, is that projects should be extended to some point between B and C, but that we cannot tell where exactly that point will be unless we have the same graphs, and know the benefit/cost relations, not only for our project X, but also for the other projects Y and Z which are the possible alternatives for spending the money. Again we see that we cannot tell much about a project, unless we also know something about other projects. Only those people who have a view of the development programme of a country as a whole, are in a position to determine the best scale to which a specific project should be carried.

The right scale for a project will be fairly close to point C if the alternate projects are of a very large scale nature, so that it would not be possible to undertake them on a small scale. In this case, if the contemplated extension of project X is fairly small, i.e., if B and C are close together, the best scale will be close to point C. This will also be the case if the benefit/cost ratio of project X is very much higher than that of any other alternative project Y and Z, i.e., if project X has a very clearly marked priority.

On the other hand, if there are several other alternative projects with a benefit/cost ratio very similar to that of the priority project X, and if they can be economically undertaken on a fairly small scale, then the likelihood is that the right scale for project X will be pretty close to point B.

To summarize, the right scale will be neither at point B, with the best benefit/cost ratio, nor at point C, with the highest net benefits, but somewhere in-between. Where exactly it will be, can only be determined by studying the alternative methods of spending the money involved in an extension of the project from B to C.

XIX Increase of Resources Made Available for Economic Development

Let us summarise the position so far reached, before taking some further steps. We have seen that development programmes should be kept within the limits of available resources, and we have seen the consequences of what happens if they are not. We have also seen that this limitation of development programmes to present available resources should apply only to those projects which are actually executed, but not to those which are formulated and investigated. I now wish to make a further qualification, namely, that the principle of keeping development programmes within available resources is not equivalent to a suggestion that development programmes

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should be cut down. Rather, it is a suggestion that the resources made available for economic development should be increased.

Avoidance of inflation is not an aim in itself. A country can always avoid inflation by failing to have any development programme or development projects. Our problem is not to avoid inflation, but how to have the maximum possible development without inflation. The government of an underdeveloped country may have followed the soundest financial policies, it may have an unbroken record of balanced budgets, absence of internal debts, stable prices, etc., and yet it may have failed in its essential economic duties.

Putting it in a different way, a government should not try to avoid inflationary pressure, such pressure is inherent in economic development which means additional demand for labour, materials and services of all kinds which go into development projects. Economic development is inflationary pressure. But if a government should not avoid inflationary pressure, neither should it give way before it. It should go out and meet it by making available additional resources, to satisfy the claims of economic development.

Such additional resources can come from any of the following four sources :

- (1) Taxation.
- (2) Borrowing.
- (3) Voluntary Saving.
- (4) Reduction of government expenditure for purposes other than economic development.

There will be hardly any underdeveloped country where some additional resources cannot be mobilised from one or some or all of these four sources.

THE " FIRST " PROJECTS ARE FINANCIAL

What the discussion which we have so far had in this course would lead up to, is this. In drawing up a development programme it is wrong to start with particular projects. That should be the second stage. The first stage in drawing up programmes of economic development is to do with resources rather than projects. How can we increase the resources made available for economic development? How can we increase the yield of taxation? How can we increase borrowing? How can we encourage saving? How can we reduce non-development expenditure? It is questions of this kind, rather than questions relating to specific projects, which take precedence in development programmes. The economist has priority over the technician in this respect. Only when these first questions relating to resources have been answered, can we begin to ask : " What are the best projects to fit into the available resources which will give us the greatest possible excess of benefits over cost for the economy as a whole ? "

If you like to put it that way, you could say that the first development projects are projects designed to improve taxation, borrowing methods, and savings facilities, and to cut out inessential government expenditure

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by administrative or other reforms. Those are the first development projects. Irrigation schemes, river valley development schemes, electricity — all these things that we have been discussing—come afterwards. Resources are the horse and projects are the cart. The horse should be put before the cart. It does not make sense to do it the other way.

THE BUDGETARY ASPECTS

In reply to a question raised, let me make it quite clear that the government's job in underdeveloped countries is to make the resources available, not only for the public development programme, but for private development projects as well. The government, not private developers, have the responsibility to see that development programmes do not end (and be frustrated by) inflation. Private people cannot do it. Private people have no power of taxation or control of money. The government must do it.

This has two practical applications. First, a balanced budget may not be enough for an underdeveloped country. Second, there must be a group of persons in some government department or other official position in an underdeveloped country who can see the details not only of public, but also of private development expenditures, and see them in relation to total resources and their wider financial and economic effects.

The second of these two applications explains itself; but the first may stand in need of some explanation. A balanced budget is not enough, because the taxation may be required to reduce consumption or inessential expenditure, in order to find resources, not only for public development projects, but also for private development projects. Inflation can start through excessive private development or public development. It does not matter whether a specific project is public or private—it creates exactly the same demand for resources. The same cement is needed for the building of a public structure as for a private structure; the same steel for the machinery in a government factory as in a private factory. The distinction between capitalism and socialism fades before the facts of inflation.

I think you will see now what I mean when I say that the normal condition in an underdeveloped country which relies to a large extent on private development, and which does not get substantial aid from abroad in its economic development, should be a budget surplus. How many underdeveloped countries are there with a budget surplus? A balanced budget is, of course, very much better than a budget deficit, but it is often not enough to prevent inflation. Pakistan and India both have roughly balanced budgets and both are very proud of it—and rightly so. But neither of the two has been able to avoid altogether some inflationary symptoms, in spite of the balanced budgets. Yet 99 out of a 100 officials concerned with government finance in underdeveloped countries will sit back and think that their job is done if they have related tax receipts to public expenditure. The question should not be: "What is the public expenditure for which I have to find revenue?" The question should be "What is the total development expenditure, public and private, for which I have to find revenue?" The answer to that question would often result in a budget surplus. Yet how often is the question asked in that form?

The link between public expenditure and public revenue is traditional

and deeply rooted everywhere, not only in underdeveloped countries. But to have good development programmes, I think it is important to abandon this link. The link should be between *total* development expenditure and public revenue, not between *public* expenditure and public revenue. One way of seeing this point is to realise that the yield of taxation may quite well be used in order to give subsidies, in various forms, to private development projects. Some underdeveloped countries follow policies in that direction.

XX Shifting the Burden of Development to Future Resources

I shall now turn to answer a question that will loom large in your minds. Is it necessary to fit development programmes into *presently* available resources? You may ask: "You have told us of the principle of the multiplier—that our future resources available for economic development should be very much larger than the resources presently available, if our development policy is successful. If that is so, why then should we not finance development from our future resources which will be so much greater? If we are going to be so much better off, is it not sensible to shift the burden of economic development from the present to the future and stop worrying about taxing the present generation for things which will benefit future ones?"

That is a plausible question and it reflects widespread views. Nevertheless, it is a wrong view, and I think it is important for the formulation of a good development policy to see that and why it is wrong.

IMPOSSIBILITY OF SHIFTING THE BURDEN OF A DOMESTICALLY FINANCED DEVELOPMENT PROGRAMME

There is only one way of shifting the burden of economic development from the present to the future. That is by borrowing from abroad. If you borrow from abroad and repay in the future, you do not have to exert your present resources. Instead, you use your future resources when the time of repaying the foreign loan comes. If your future resources are greater than your present ones, both in terms of total production and in terms of foreign exchange, that may be a very sensible thing to do. But in so far as your development programme has to be domestically financed, you cannot shift the burden to the future in any way, or by any device. To-day's development has to be met by to-day's resources. You cannot build a barrage to-day by using labour and raw materials in five years' time. You all know that. It is a physical fact and because it is a physical fact, no financial device can change it. Finance can never make possible what is physically impossible.

Yet the idea that it is financially possible to shift the burden to the future is deeply rooted and widespread. In nearly all underdeveloped countries, you find ideas such as these: "We must tax for current expenditure, but it is safe to borrow for development expenditure. Development expenditure benefits the future. Therefore, let the future look after the finance when the loans have to be repaid. There is no harm in running into public debt as long as we create tangible capital assets to balance the debts. Let us balance our revenue budget but do not let us worry about the capital budget".

Such ideas are wrong, and they can be a great obstacle to a good development policy, by leading right into inflation. So let us see why they are wrong.

XXI Budgetary Implications : A 'Capital Budget' for Economic Development

Now I wish to make it quite clear that I am in no way objecting to the idea of a capital budget. I think that in any good presentation of a development programme the government ought to distinguish between the revenue budget and the capital budget. It is always very important that a government, or provincial government, or a local authority, or whoever undertakes any kind of development programme, should know and distinguish and say "This kind of expenditure is for current administration, or current services—or for replacement of what we have already got. But this other kind of expenditure creates new assets which will benefit the future." Any government that wants to have a sensible and consistent policy should do so. The value of the distinction is for purposes of information, for purposes of study, for purposes of estimation of future resources. My argument is that there is no economic case at all for financing the development budget or capital budget in any different way from your revenue budget. Your development budget—development expenditure—raises the demand for present goods and services in exactly the same way as your revenue budget.

I want to remind you again of a statement that I made some time ago, when we discussed inflationary processes in underdeveloped countries, that the economic views on inflation as a method of financing economic development and economic progress have been developed in industrialised countries where conditions are very different. There are no text books of economics which start off with the conditions in underdeveloped countries. Many general economic theories and economic views that are now universally accepted and appear in the shape of general theories, are really theories for industrialised countries. Conditions in underdeveloped countries are often very different. Here in the case of the capital budget we have another illustration of the same point. The view that a capital budget should be financed in a different way from the revenue budget, is fairly generally accepted, but it has been developed for the special conditions of industrialised countries. Since we are now talking of underdeveloped countries, I want to emphasise, that there is no economic case for distinguishing between those two kinds of expenditure.

That is why I want to repeat that, in underdeveloped countries which have a fairly ambitious programme and do not get large loans from abroad, the normal position should be a budget surplus—a budget surplus not only in relation to current expenditure, and not only even in relation to total government expenditure, current and on development. Since savings are usually very low, the taxation will have to cover not only all public expenditure but also private development expenditure, in order to offset the pressure of private demand for goods and services for economic development.

THE CASE FOR BORROWING FOR DEVELOPMENT PROGRAMMES.

Having made that general point, let me modify it immediately. I do not want to be too extreme. There is, of course, a case for borrowing but it must be put in the right way. I do not want you to understand from what I have said so far, that an underdeveloped country must always tax and never borrow. That is very far from true. But if you borrow for the finance of your development projects, you have got to do it with your eyes open. You should not borrow under an illusion, that by borrowing you can shift the burden to the future. You just cannot do that. It is that does not mean that borrowing does not serve other useful purposes.

For instance, borrowing may be in effect a good form of taxation. If people, instead of spending their money on consumption goods, import radio sets, shall we say, are voluntarily willing to save this money and hand it over to their government for financing economic development, that is a thoroughly desirable thing. There you have all the advantages of taxation since it is not the purpose of taxation "to find the money for the development programme". The government can always "find the money". The government have to tax because you have to keep the programme within your present available resources. If your total cake is limited and you cut out a slice from that total cake for economic development, you must reduce the other slices. That is the purpose of taxation—reduce the other slices.

Now once you get that idea firmly in your mind, you can see that borrowing can be a very good thing. In our illustration, borrowing has achieved exactly the same purpose as taxation. These people, instead of buying imported radio sets, hand their money over to the government. It is as good as if you had taxed them. There is no special advantage of taxation, other than to reduce those demands for goods and services which might compete with economic development. But if borrowing does exactly the same job, it may be just as good as taxation. It may even be better than taxation. People make a voluntary subscription to a Road Bond or to a Development Bond or general Government Bond, but you might not have been able to tax them. Your taxation system may not be good enough to get into all the corners where incomes are made. It may not even be desirable to have a taxation system which is too elaborate. Taxation must be fairly simple, otherwise it costs a great deal to administer. Or again, if you try to tax people, they might stop earning their income. They might say, 'If I have to pay a high profit tax, well—it is not worth my while. I shall stop production'. That is a very undesirable effect of taxation. Therefore, borrowing may be better than taxation in certain circumstances. But borrowing does not shift, from the present to the future, the burden of the sacrifice that you have now to bring, in terms of consumption, in terms of other investments, in terms of general government expenditure, in terms of everything that competes with economic development.

The difference between borrowing and taxation is, that when people lend you their money, you give them something in return. You give them a piece of paper in return. For them it will be a capital asset. They give you their money and they renounce their demand for current goods and services. When people give you their money in subscription to government

ment bonds, is equivalent to their giving you little pieces of paper on which they write; "We promise to the extent of Rs. 10 or Rs 100 (or whatever it may be), not to interfere with your development programme". In return for that you hand them different bits of paper, on which you write, "We promise you in 10 or 20 years' time (or whatever the case may be), to pay you a certain income out of the proceeds of our development".

Now one of the main points is that people do not feel poorer by this transaction. They have given you something and they have got something. If you tax them, they have lost something and got nothing in return. They are poorer and, therefore, likely to reduce their consumption to some extent. But if you borrow money from people, you give them something in return. At any future date, people may try to sell those bits of paper which you have given them. They have lent you the money now for 10 years, but there is no certainty that they are going to hold those assets that you have given them. People may bring those assets to a bank and say, "Well, we have lent our money to the government, we have got this bond in return, now will you lend us some money on the security of this bond, so that we can spend a little more on ourselves—there is a nice automobile, or there is a nice radio set, or a nice refrigerator, that we would like to buy". Well, if that happens, the purpose of borrowing is frustrated. The point of borrowing is to prevent people from asking for radio sets, refrigerators, etc., because the resources are needed for economic development. But if you borrow money from them you cannot be certain that you have frustrated their demand. That is the main argument for saying that, in general, taxation is better than borrowing.

Let me mention one other argument in the same direction. You might argue; "It is only right and fair, that if people contribute to economic development they should be given something in return, same claim to the increased output, that we hope to have as a result of our economic development. Therefore, let us hand them these pieces of paper which they can treat as a capital assets." That also, from an economic point of view, is a fallacy. If your development is successful, in the sense that your resources and your national income are increased, then your people will be better off whether you give them these pieces of paper or not. But if your development is unsuccessful, if your resources are not increased, if your benefit/cost calculation has been wrong, or your method of executing those projects has been wrong—then they will not be any better off than they were before. Then you can only pay those people, who lent you money, by depriving some other people of their previous share. On the other hand, if the development is successful every one will be better off. You can then decide who exactly is to benefit. In other words, the argument that it is better to borrow money for development than to tax people because that is a method of making them share the fruits of economic development—is a complete misconception. The fruits of economic development will be handed out, in any case, in increased output. It has nothing to do with whether your people hold government bonds or not. The only difference is that if you borrow money for economic development and lots of people hold government bonds, you have committed yourself to distribute your income, in future years, in certain ways, paying an income to those who hold bonds. If your income is increased, that

is fine. Then you can give them that extra income, without depriving anyone else of his income. But that you could have done in any case. You can do it because your output is increased.

The main justification for borrowing is to reach into those corners that taxation cannot reach. Taxation must always be a blunt weapon because tax laws must be simple, fair, and must not discourage people from working. Taxation, therefore, will always leave a great deal of room for voluntary effort. That should certainly be encouraged. But otherwise borrowing has no particular advantage over taxation.

The question of hoarding of money has been raised and its relation to our problem. The answer is obvious from our previous discussion. The purpose of taxation is to eliminate the competition for economic development, arising from demand for consumption, demand for other types of government expenditure and so forth. The purpose is to give government development projects a clear run, see that they can go ahead, and are not held back by competing demand for the same goods and services that you need for development. Now, it is clear that if people save voluntarily, even if they do not subscribe to government loans but put their money into the savings bank or hoard their money at home, they do not use their income for current expenditure. For your immediate purposes, of giving your development projects a clear run, saving and hoarding are just as good as taxation or borrowing.

This may seem strange to some of you, because you think of hoarding as a bad thing. But let us make a distinction here. If people hoard goods, shall we say, food or gold that has to be imported—it is a great problem in India and Pakistan, of course—that is a thoroughly undesirable thing. It competes with economic development. If people hoard gold that has to be imported, the foreign exchange that is spent on buying the gold abroad is not available for buying machinery for development. If people hoard food, the food that is being hoarded, is not available to feed the workers on the development project. But if people hoard money, that is not so bad. For your immediate purposes it is alright. If people hoard money, to that extent that give you a clear run for your development project. But they may change their mind at any moment. If you tax people, the money is taken away from them, they cannot change their mind any more. The thing is done. But if people hoard money they keep control of it and it might enter their mind at any moment to spend their hoard. Hoarded money is a potential demand for resources which could compete with economic development. You run a risk that the hoarders will change their mind. Then your development programme will either be held up—you remember, lots of projects started and resources not available for completing them—or else, you end up in an inflation.

I have given you now the strictly economic answer to your question on hoarding. But in actual administrative practice I think it would be very unsound to go away with the idea that hoarding should be encouraged. What I said is an argument for not being unduly discouraged by hoarding. If people hold on to money, well, they give you a breathing space in which to work out how to encourage them to lend you their money for longer terms, instead of holding on to it. It is never a sound position for governments to be faced with large hoards of money which might be spent

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at any moment. It is a very dangerous position, and, therefore, in terms of reality, we do not want to encourage hoarding. But it is nothing to be panicky about. It does not interfere with your development programme. There is never any need to cut down your development programme now because you find people are hoarding money. That would be a completely irrational and wrong action to take. But on the other hand I am not saying in practical terms that you should go away and say "We have learnt here at this Centre, that if people hoard money, we can go ahead with our development projects, and do not have to worry about taxation. Let people hoard money and do away with taxation." That I would never advocate. Practically, you have to get the money out of the hoards into better types of investment, either by taxation or by borrowing. But it is quite important to know what you are doing, and why you are doing it. You are not doing it because hoarding money interferes with your present development programme. You are doing it because it might interfere with your future plans, at some future date. It is always important to do the right thing for the right reason. If you do the right thing for the wrong reason, you are likely to do the right thing in the wrong way.

A SPECIAL DANGER OF THE 'CAPITAL BUDGET': DISTORTED DEVELOPMENT PROGRAMMES

Let me add one more word which seems to me important, in connection with this idea of a capital budget and financing it by borrowing. One of the dangers in holding to this idea of borrowing against tangible capital assets is to forget the proposition, made quite early in this course, that economic development does not only consist of capital expenditure on capital projects. Economic development also consists in additions to intangible capital. In our benefit/cost analysis of a particular project, we are always very careful to say that in addition to the tangible benefits of economic development there are intangible benefits, which may be more important than the tangible benefits. Well, similarly we also said, if you remember, that the capital of a country does not only consist of tangible capital resources—things that you can touch and feel—they also consist of intangible things. I used the picture of the iceberg, which has 1/10ths of its surface above water and visible but 9/10ths below water and is invisible. Economic development consists in increasing the iceberg—both above water and below water—not only the tangible capital but also the intangible capital. The health of people, the strength of people, the skill of people, the education of people, scientific tradition, social co-operation, efficiency of government, good legal institutions, good economic institutions—these things are not capital assets, they would not go into your capital budget, yet they benefit the future just as surely as expenditure on dams and irrigation channels, machinery and all those things you can touch and feel.

Now if you have got the theory that you can always safely borrow as long as you create tangible capital assets, you draw a distinction between tangible capital assets and intangible capital assets, that is quite unreal.

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For economic purposes, there is no such distinction. The important distinction is whether or not we think that the expenditure benefits the future by contributing to economic development. Whether it creates tangible assets or not, has nothing to do with it. It does not follow that expenditure which does not create tangible capital assets, is not true development expenditure in the same sense as expenditure on your capital project—it may be better development expenditure. Money spent on improved health or improved education—may result in tangible assets in the form of hospitals and schools, but it need not take that form. Health expenditure can be on an anti-malaria campaign, which takes the form of buying a lot of D. D. T. and then spraying it into the air—there is no capital asset but the health of people has been improved. To say that this expenditure on D. D. T. is not development expenditure, would be quite wrong.

Now you see what I am driving at. If you draw that distinction between tangible capital assets which can be financed by borrowing while the other cannot, you are not only doing something that does not make economic sense—you are also in danger of distorting your development programme. The development programme is likely to be wrong if you have that idea, because you will put too much stress on tangible capital projects and you will tend to underestimate the importance of those other things. Your sense of priority is likely to be wrong. If you give a project priority over another project, for instance if you give priority to expenditure on a hydro electric scheme over education expenditure, simply because the first results in tangible assets and you feel entitled to borrow to finance it, where as the second does not result in tangible assets and, therefore, you are under the impression that it would not be sound to borrow for this you are not acting noisily. If it is sound to borrow for your hydro-electric scheme, it is also sound to borrow for your education scheme. It is either sound for both, or not sound for either of the two. Remember that my general view was that it is not sound to borrow for either of them because development expenditure like other expenditure must be financed from present resources.

FINANCIAL CONSIDERATIONS AND PRIORITIES WITHIN DEVELOPMENT PROGRAMMES—FOREIGN FINANCE

If your borrowing comes from abroad, that again is entirely different matter. If you deal with the International Bank or any other outside source of finance, and if you know that the International Bank will only lend you money on the Thal project or some other capital project, but not for educational improvement, well then it is very sensible of you to give the Thal project priority over the educational expenditure. Because then the Thal project would enable you to get help from abroad, and shift the burden from the present to the future, when you expect to be better off. The ideal arrangement is to put up to any foreign source of finance the sort of things for which you can get such finance, and use your domestic finance for the other things—possibly more important things—for which you cannot get foreign finance. That is very sensible. The only snag there is that the International Bank or other foreign financier will almost certainly not lend you all the money to undertake the

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Thal project The general picture is that the International Bank will lend you the foreign exchange that you require for the Thal project, but they will still require you to tie up your own domestic money in the project for the expenditure that is for your own services. Therefore, that money would not be available for educational expenditure. They may lend you 10 or 20% or 40%, whatever your foreign proportion is but may still require you to spend your own money on the project to the extent of 60 or 80%.

This is a problem that you will have to consider on its merits. You think educational expenditure is your top priority, but you cannot get foreign help for it—the Thal project is your second best project, but you can get foreign help for it. Well, the thing to do is to sit down and calculate how much foreign help you can get for the Thal project—how much of your own money you would still need for the Thal project—how much of your own money you would have left for educational expenditure, then work out your total benefits in the best way for the two alternative policies. You may decide either to do without foreign help and spend your own money on the educational project, or alternatively, you may decide to get foreign help and undertake the Thal project and use whatever of your own money is left over for the educational project. That is the only sensible approach to a problem like that.

XXII Shifting the Burden ? The Cases of England, the U. S. S. R., the U. S. A and Japan.

I would now like to emphasise once more the principle that in whatever way you finance your economic development you always have to do it on present sacrifices, that there is no method of shifting the burden of economic development to the future except by obtaining aid from abroad, in the form of loans or grants or gifts or technical help. It is quite instructive to look at the economic development history of four of the most important countries, of England, Soviet Russia, the United States of America and Japan, in the light of the principles that we have so far discussed. How do they apply in their case?

ENGLAND

England is the oldest industrial country. In the case of England, you can be certain that all development was domestically financed. England did not get any help from abroad. That was impossible, because England was the first country to industrialise and there was no other country which could have helped. Now how did a country like England finance economic development? The method used by England you can describe as a combination of a very unequal income distribution with a puritan spirit on the part of those people who received the big incomes. This sounds very puzzling. Let me explain what I mean. In England during the early years of the Industrial Revolution, you had a great deal of incredible distress and poverty

among the urban people—people who came from the farms into the towns in order to find employment in the growing industries. There was no social security legislation—those things came later as a result of economic development. The consumption of the population was reduced by their very low real wages. The wages of labour in England were kept down constantly by the fact that there was never any labour shortage. There was an enormous influx of people from the countryside. In fact, in the early years of the Industrial Revolution there always was considerable urban unemployment in England. Social conditions were very bad and shocking—many of you may have read about it in Dickens—terrible housing conditions, terrible poverty and absence of any social provision. Now it is very fashionable to be indignant about such things. You may say, "Well we do not want this sort of thing to happen here. If that is the price of economic development, we do not want to have it." Well, it is easy to be indignant. People in England now can afford to be indignant because they are the beneficiaries of that system. It is certainly not a nice way of doing it. Maybe other methods appeal to us more. But it has been proved that one very effective system of reducing mass consumption is to have a very unequal income distribution. Now that is a very unpalatable method of financing economic development, but I can only say again it has been successful.

But I want to stress that it has only been successful because of a combination. An unequal income distribution alone does not give you economic development. It all depends upon what your upper income group will do with their income. You have an unequal income distribution in many underdeveloped countries nowadays. In fact, the income distribution in underdeveloped countries is often much more unequal than it is in industrialised countries. But unequal income distribution does not produce economic development if the people who get the big incomes are interested in luxurious consumption, if they want to build big houses for themselves, if they want to have a hundred servants each, if they want to have property abroad, if they want to spend their time travelling abroad or if they want to buy up land or jewels. Unequal income distribution is not enough, it must be combined with something. And that something was present in England in those years. It was what I call a puritan spirit among the upper income groups. As it happened those people who got the big incomes were not interested in luxury consumption. They did not want to take their money abroad. They did not want to go travelling abroad. They did not want to have big houses or big estates or many servants, etc. As it happened, they were interested in investing their money in factories, in productive investment. The economic development of England is a clear example of how private development can proceed without a public service development programme. What we nowadays call public service development—what we talk about in this Centre—in England was a result of factory development.

There, very briefly, you have an example of one way of doing it. If you have an upper income group which has that puritan spirit, which is interested in building factories and investing in productive enterprise generally, and if you can have a very unequal income distribution, and if you can postpone the demand for social services and social improvement by two generations at least, then I think you have a safe background for one type

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of economic development That is what you might call the English way Very crudely, the system worked in this way. The masses of the people were given such low income that they could not consume more than the barest minimum of life They just managed to exist. You must remember that it was in those years that Malthus and Marx formed their theory of the "iron law of wages". They said that workers in a capitalist system are always kept down to starvation level. Well, they learnt their economics in England in those years They looked round them and saw that people were living at starvation level But I think they were wrong in the conclusion they formed What they saw, was *not* a capitalist society keeping its workers at starvation level—what they saw was an economic system in the early stages of economic development and financing its economic development, by present sacrifices Very few people would maintain that English workers at this present moment live at starvation level They live at a fairly decent standard of living My argument is that they live at that decent level because their fore-fathers—three, four, five generations ago—lived at starvation level. Therefore, there is no use in being indignant about that method of promoting economic development If you put production first, and social improvement second, as has very clearly been done in the English case—and if you have an upper income group whose mentality and ability and outlook fit in with this way of promoting economic development—I still think that the English method of economic development has a lot to teach

THE U S S R

In the case of Russia you have what appears to be a very different system Yet essentially, the Russian method of promoting economic development is the same as the English method The differences between the English and the Russian methods of promoting economic development are much less important than the similarities between them. I would like you to note the similarities before you note the differences There was a very rigid restriction of consumption, as you all know, in the early years of the Russian economic development—the years between 1920 and 1927, shall we say—when there was incredible misery in Russia Millions died of starvation. Russia also, like England, obtained very little help from abroad for economic development Russia obtained a little help, but very little Russia also, had—well, not exactly an upper income group—but a group on top—consisting of people with the same puritan spirit as the early English business men had They did not want luxury consumption, they did not want big estates, their interest, again, was in ploughing back money—not their own money, but the national income of which they were in control—back into productive investment The spirit and outlook of England in those early years and of Russia during, in spite of all the superficial differences is really very similar Many of the things that happened in England round about 1810—1850, repeated themselves in Russia in a much shorter period, 1920—1927 And again, I would ask you to note that the sacrifices of economic development were carried by that generation which had to do the developing There was no question, no possibility, of shifting

the burden to the future—the starvation, the misery that I mentioned took place in the early years of economic development. There was no way of avoiding that, no way of postponing it. Again, there is no point in being indignant about it. If Russia had not gone through that period, Russia could not have developed as she did. That was the price of economic development and Russia was willing to pay it, just like England had been willing to pay it in the earlier period.

The method, of course, by which Russian development was financed, was very different from the English method. It was not a question of giving your upper income groups incomes which were so large that they did not want to consume them. Rather, it was a question of compressing the income of the lower income groups by direct limitation of the output of consumption goods, and making sure that the surplus was directed into public investment. Instead by low incomes, the lower income groups in Russia were rationed in their consumption by direct controls. In England there was no direct control. In the early years of the Industrial Revolution, such things as rationing, or government orders to limit the output of consumption goods were unheard of. The very word 'rationing' is new in the English language, invented during the first World War. But the people in England were rationed by their low incomes. There was no need for rationing because they were not given money to buy more than the barest minimum. That was why England could finance economic development without rationing or direct controls. Russia chose the method of rationing and direct control. Yet behind those differences, the essential process was the same. It was again a combination of reduction of consumption, and a puritan spirit among the people in control. That also is a method which history has shown to be workable. It is another way of producing economic development. It involves exactly the same sacrifices, although possibly in different forms, as the English method involves. Whether you have a capitalist system or socialist system, the sacrifices of economic development are physical facts, they are due to shortages of resources—they have nothing to do with any particular social, political or economic system.

THE U S A.

My third illustration will be the United States of America. We could of course, include Canada, Australia, etc., as countries which are very similar in their type of development to the United States. Well, here you have an entirely different picture. In England and Russia, as far as manpower is concerned, economic development was supported by a large influx of people from the countryside into the towns. England and Russia were both old countries with a large population and a large farming population. There was an almost unending reservoir of labour. The United States was a country newly opened up. There was no question of industrialization at the expense of agricultural development. In the United States, agriculture and industry had to be built up at the same time. There was no question of an influx of labour from the country into towns because there were no people in the country. In the United States, industrial development was undertaken by means of immigration. That gives us an entirely different picture,

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because in the United States you have an example of a country where it has been possible to shift the burden of economic development. Not to shift it from the present to the future, but to shift it to other countries. Roughly speaking, the capital funds which were necessary for the development of the country and which in England and in Russia had to be obtained by means of incredible hardships, privation and starvation, were obtained in the United States in the form of the money spent by the countries of emigration, in feeding, clothing, training and equipping the immigrants that came to the United States. The United States was acquiring a producing population, ready-made for them, at no cost at all. The cost was on the countries of emigration. The United States was in the happy position (i.e., gifts) to finance its economic development from abroad through immigration much more than through capital investment (i.e., loans).

That has given an immense advantage to the United States. The money saved in not having to feed, cloth, equip, teach and train their adult population, before they started producing, is the great fund from which the United States has been able to draw. This fund combined with rich natural resources and a large free trade area, has given the United States the original impetus from which she was able to make development into that cumulative process that we discussed earlier on. I am not saying that development was automatic. I am not saying now that immigration automatically induces development. Other countries have received plenty of immigrants but they have not developed. There must also be a favourable environment for development. The immigrants who came to the United States were the type which wanted to promote economic development, willing to save, which had interest in productive investment, which put money back into factories, into farm equipment and not into luxury consumption and those other things. I am not neglecting the environment—but the initial capital fund for the development that you observe in the United States, Canada, Australia, is provided by immigration which is equivalent to a large subsidy from abroad.

Thus, in the United States you have an illustration of the principle that I mentioned before, that by obtaining foreign aid you may be able to avoid some of the burden of present economic development. But I would emphasize very specially that, in spite of these extraordinarily favourable conditions in the case of the United States, there still were tremendous sacrifices during the early stages. Think of the pioneering in the United States, of the people who went out West, the early railroad builders. It would be very wrong to conclude that theirs was a comfortable life. It was a life of incredible hardship, of great risks—one of the hardest lives you could possibly imagine. But that was a present sacrifice. The present stage of economic development of the United States could not have been reached without those sacrifices, by those people at that time. That could not be postponed. The opening up of the country, with all the help the United States received from abroad, through constant immigration, and with all the favourable conditions that obtained in the United States, still involved a very strong element of immediate sacrifice and immediate cost. That is a point worth noting. I should say that conditions in the United States—the type of immigrant, the country the immigrants came from, the natural

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resources, the vast trade area, the circumstances of the time, the investment that took place in the United States—were as favourable as we are likely to find anywhere in this world. And yet, with all that, still a very strong element of present sacrifice

JAPAN

Finally, in this series of brief sketches, we might mention Japan. Japan is an especially interesting case, because it is so far the only example of people of non-European stock which has been able to develop to a very high degree. Well, how did Japan do it? We have people among us who probably know much more about the economic history of Japan than I do. But from the few facts that I have been able to gather, I should say that Japan has followed a policy in economic development that contains elements of the English method, of the Russian method and of the American method. Japan, I think, provides an example of how you can mix the three methods. From England, Japan very definitely took the combination that I described, of keeping wages low and going very slow on social improvement in the early stages on the one hand, and the puritan spirit among businessmen on the other hand. There is a close resemblance between the attitude and behaviour of Japanese businessmen and those of the early English businessmen. Japan resembles Russia in that the Government had a public development programme which in Japan was closely synchronised with the private development programme. Japan had that in common with the Russian method that the government took a very important part in this process by considerable public government expenditure. In particular, the government played one part in the Japanese method which it did not play anywhere else. Japan did receive a certain amount of help from abroad in her process of development. There was a certain amount of technical assistance, a good deal of foreign investment, borrowing from abroad. Japan certainly received a great deal more help from abroad more than Russia, although less than the United States. One of the main functions of the Japanese government in the process of Japanese development, as I see it, was to make quite certain that those loans which they obtained from abroad were utilised in the investment projects which had the greatest priority. In that respect, the Japanese method of promoting economic development is perhaps closest to the method that is now tried in most underdeveloped countries, the method that we have been discussing here, of promoting economic development by development programmes drawn up by governments. The Japanese government, I believe, had at all times, during the process of industrial development, a fairly well defined picture of its priorities. The Japanese government has at all times said, "We want foreign money for railroads, or for electricity, but we do not want it for, shall we say, producing toys." The Japanese government always was careful to channel the flow of foreign capital into priority investments.

In addition, Japan provides a good illustration of what I mentioned before in this course, that it is wrong for a government to adopt a "live and let live" attitude to private enterprise. The right attitude is a combination

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of control and inducements. One way or the other, there must be some working relationship between public enterprise and private enterprise. Japan, to my mind, is a good illustration of that, because the Japanese government had a carefully worked out system of relationship with private enterprise, both by control and inducement. But again you have the same story of present sacrifice. You have the story of absence of social improvement in Japan during the early period, of very low wages, very poor living

SUMMARY

There you have four different examples of successful economic development. My own conclusion would be that there is no stereotyped pattern or method of development. There is no particular road to economic development. You cannot say, "This is the way to do it and there is no other way." There is the economic fact of four very different ways of doing it, and they all led to successful development. Therefore, we have to look for what is common in these methods. If there is one thing common, it is the story of the present sacrifice, maintained over extended periods, and someone to see that the results of these sacrifices went into economic development.

That was, if you like, a slight diversion from our main subject, but I thought it would be interesting to illustrate the general principles about which we have been talking in terms of the actual experience of some countries, which "have done it".

We discussed how far a country should give priority in development plans to projects for which foreign capital could be obtained. Now let me ask that question in a more general form. How far should the priorities within a development programme be influenced by financial considerations? Can you say "I will simply pick out the project with the highest benefit/cost ratio. I do not worry about any financial arrangement — that is my best project"?

GENERAL PRIORITIES TECHNICAL, NOT FINANCIAL

If you ask the question in that general form, my answer would be that in the general case I think it is true to say that the priority selection among projects should be on technical grounds and not on financial grounds. There is a famous statement by Keynes who wrote once that it is the proper job of finance to see that nothing is ever done on financial grounds. That is a very true statement in our case. One of the most important jobs of financial experts, in an underdeveloped country, should be to see that the true technical priorities within a development programme are not upset or made impossible because of financial obstacles. The priorities within a development programme of an underdeveloped country ought to reflect the real conditions of that country.

For instance, take that important distinction between over-populated underdeveloped countries, and underpopulated underdeveloped countries.

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Their economic problems are quite different. For that reason, many of the generalisations that you find about underdeveloped countries are quite untrue. What is true in the one case, is not necessarily true in the other case. The development programme of an over-populated underdeveloped country, like for instance, Pakistan or India, ought to reflect the fact of over-population. In such a country, any development project which takes people off the land, which reduces the pressure of population on the land, which leads to non-agricultural employment, ought to have added priority. An underdeveloped country is in a very different condition. The development programme of such a country can be much more balanced, combining the development of natural resources, agricultural development, development of light industries. There is no pressure of population. In the ultimate sense, the development programme of a country would reflect its real economic position and not any financial consideration.

THREE EXCEPTIONS

But I think once you have stated the general rule, you also have to accept that there are a number of important exceptions. I am going to give you what I believe are the most important exceptions—three cases where I believe that before you actually determine whether you should take project A or project B, you ought to take into account some financial consideration in addition to the benefit/cost ratio of each particular project.

(a) Shifting the financial burden

The first case that I think is important, is that of a project that shifts the financial burden to another place where it is easier to carry. The case that we discussed before (where the loan is shifted from domestic finance to foreign finance) is one particular example of that. But it need not be foreign finance. For instance, there are certain development projects which shift the burden from public finance to private finance. There are some development projects, take road building, with which you will find it very difficult to associate any private domestic capital. The full burden of finding the resources falls on the public finance sector. But in the case of other projects, perhaps say electricity or even more so directly productive projects like factories, you may find it possible to associate private funds with it. In so far as you can associate private capital with your project you shift the burden from public finance to private finance.

Now it may be that in an underdeveloped country it is much easier to associate private capital directly with such projects, rather than transfer this private money into public ownership first and then have a public project. It may be that your taxation machinery is not up to this. It may be also be that you get undesirable effects, if you try to tax these funds. In such cases, it is sensible to reconsider your priorities. If you find that there is a certain amount of private voluntary saving-- which you could not very well reach by taxation or borrowing, that people are willing to invest their money in productive projects on a voluntary basis but they may not be willing to

prescribe to a government bond for that purpose—in that case there is no economic reason why you should not look at your different projects in that light, in addition to your benefit/cost ratio. In such a case, it may be sensible to give higher priority than you otherwise would, to projects because they enable you to enlist the help of private capital.

Now let us again look at this problem that we had before, the attraction of foreign capital. The real problem, of course, arises when you can get foreign capital for a project which is not your priority projects. If you get foreign capital for a project which is in any case your top priority project, then you know what to do, then you certainly would undertake that project. There is no problem involved. The problem begins when you get foreign help for a non-priority project. Let us take an extreme case. Supposing you can get help from abroad in setting up a lipstick factory—taking that as an example of a completely inessential investment, something that is not part of your development programme. It will not raise your productivity. Should you permit private foreign investment to come in and start lipstick factories in your country?

The first instinct probably would be to say “No”. And you could give three arguments against it. The first argument is the one which I already mentioned. The foreign investment will always tie down some of your domestic resources. You can hardly ever say that 100% of this investment is financed from abroad. The investor needs labour to build your lipstick factory here, and it is very rarely true that the labour is imported from abroad. He will want domestic building materials, etc. Any investment, whether foreign financed or domestically financed, to some extent ties down domestic resources which are then not available for essential investment.

The second argument is, that the sale of lipstick will compete with other more essential products of your own industries and, therefore, prevent a market for your own more essential goods. If you allow this lipstick factory to be set up here, outside your development programme, they will want to sell the lipstick. In selling lipsticks they will compete, shall we say, with a textile factory which is part of your development programme. That, of course, is a bad thing, a discouraging factor for your more essential domestic goods.

The third argument against admission is that your lipstick factory is not going to increase your productivity. You might argue that it is one of those necessary “incentive goods”—unless you can supply farmers’ wives with lipstick, the farmers will not have an incentive to produce a lot because they want to buy lipsticks for their wives. But that is a very far-fetched possibility. In the case of a really inessential good, you can assume that it will not raise productivity. It does nothing to improve your balance of payments. You incur a debt in foreign currency without getting an equivalent in production, or without getting an improvement in your balance of payments position that will enable you to repay the foreign commitment at some future date, without having to reduce essential imports. The person who sets up the lipstick factory in your country, unless he happens

to be a philanthropist, will want to make a profit, will want to transfer the profit back to his own country, and he may also want to get his capital back

These are three arguments against permitting the lipstick factory. On the other hand I think there are some important counter arguments in favour of permitting the foreign lipstick factory to set up here. The first is that if you permit a foreign lipstick manufacturer to come here it may be that that is the best way of inducing the manufacturers of some of the essential products to follow. You may say, and many underdeveloped countries think that it is the right policy to say, "We want foreign capital. We welcome foreign capital. But we only want it in certain particular fields. We do not want it for lipsticks. We do not want it for oil or for railroads. We want it for factories, to make bicycles here or automobiles. That type of capital we are willing to welcome. But we do not want a non-essential production and we do not want any basic utility." That seems very sensible. But it is never safe to assume that the quality and the quantity of the foreign capital that you get into your own country is independent of each other. You may think that you can improve the quality of the capital that comes in, from your point of view, by directing it into the most essential schemes to which you give priority, without affecting its quantity. Well that may not be so. Foreign investment is a very psychological affair as has been very clearly shown in the last twenty years. Foreign investors go into a country where they think the general atmosphere, the general climate is friendly and where they think they will be allowed to make profits and allowed to transfer their profits back. One of the things which you may have to consider in making a decision is whether by prohibiting foreign capital in that particular field you are not possibly discouraging foreign capital in other fields where you want it. It may be that, in certain situations, the price of having foreign capital to help you with your more essential projects is to admit foreign capital in certain projects which you think less essential.

The second argument is that the production of "lipstick" (inessential articles of consumption that do not directly raise productivity), may fulfil an important function in reducing inflationary pressure. You give people something on which they can spend their money, and in doing so they do not tie down any resources that you need for your economic development. If you permit a foreign firm to come in and make lipstick and sell them to your people, that is for your immediate purposes as good as taxation. They will spend their money on lipsticks, which means they cannot spend it on anything else to compete with your development programme. You see, lipsticks do not compete with your development programme because they are foreign financed. The lipstick have been produced with resources that cannot contribute to your development programme because they are not under your control. It is foreign capital. But on the other hand, the lipsticks that are sold to your people now tie down money. The money that people spend on lipsticks they will not spend on other things, such as, shall we say, buildings, imported luxury articles or whatever it may be. The sale of inessential luxury articles of consumption can perform a useful economic purpose, in reducing the inflationary pressure that always goes

with economic development, by tying down money in directions which are not harmful to economic development. It is not a sound policy in an underdeveloped country, although it may sound frivolous, to prevent the production of inessential articles as a matter of principle. There is only a case of preventing the production of inessential things, in so far as that prevention would enable the economic development programme to be increased. You might think it morally wrong in a poor underdeveloped country that some people should be allowed to sell and other people to buy hipstick. The economist cannot say anything to that. From the economic point of view, there is never an argument for preventing the production of inessential articles only because they are inessential. On the contrary, the production of inessential articles in underdeveloped countries where they do not interfere with the development programme is usually helpful to the development programme, by tying down purchasing power. That is the second argument worth considering.

Thirdly, and this is the most important argument, if a foreign firm comes and produces inessential articles that are low down in your priority list, perhaps radio sets (hipsticks are likely to be entirely outside your priority list), that has the advantage, from your point of view, that it will enable you to concentrate on the top priority projects. Because you do not have to trouble about the lower priority project because private enterprise from abroad looks after them, you may be able to concentrate your resources much more on basic public service projects. The influx of foreign capital for low priority projects may increase the number of high priority projects that you can undertake.

That of course is not a very happy solution, if it does mean that your own domestic capital is in things that do not yield any direct profit, whereas the foreign capital that comes in is engaged in the directly productive things, on the basis of your public service provision, that do make a direct profit. It means that your own domestic investors have to be taxed in order to finance your public service programme and be prevented from starting inessential factories of their own, while foreign individuals, or foreign corporations, come in and are allowed to start these directly productive things and make a profit on them. But in the long run, all the same, it may be a paying proposition.

Thus there is no universal answer to our general question. There are always arguments for it and arguments against. I do not think that you can always say that it is wrong to give priority to a project which otherwise would not have priority because you can get foreign capital for it. You must always study each individual case that you have in mind. But I should say that it should always be a weighty consideration for added priority, if a particular project might lift the burden from your own domestic public finance. It is an important point that I stressed in this course, that in underdeveloped countries, by the nature of things, the main burden is on public finance. The bulk of expenditure is often public and in any case it is the duty of the government to find the money, not only for its own public expenditure, but also to offset the inflationary pressure from private expenditure. For that reason the weakest spot in the whole picture of underdeveloped countries is often public finance. For that reason, any-

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thing which shifts the weight from the weakest link on to other links is a good thing. Anything that shifts the load to private finance is anything that shifts the load abroad.

(b) Projects which help in the creation of a capital market

The second case for "financial priorities" is when you can say that a project results in saleable securities. It probably deserves some extra priority for that reason. For instance, there are certain projects for which you can sell bonds. People will buy bonds, shall we say, for railways, but they will not buy road bonds. The weakness of financial institutions and particularly the weakness of capital markets, in underdeveloped countries is one of the obstacles to economic development. In the long run, what you see in any country that has gone through the process of economic development, on a non-socialist basis, is a developed system of banking, companies on a non-personal basis with shares and debentures, and an intricate financial machinery to enable people to invest their money in shares and debentures — and to be pretty certain to sell them again when they want to. Therefore, anything in under developed countries is a good thing that helps the growth of a capital market, that gets people used to dealing in securities, to invest their money in this impersonal manner, to buy securities instead of hoarding, that offers people an outlet for their savings which directly contributes to economic development. Therefore, any development project which results in the creation of saleable securities, which provides, therefore, a productive outlet for savings and helps to form the raw material of a stock exchange or of a developed market in securities, for that reason deserves special consideration. Of course, it is one of those intangible benefits if you like, that you cannot put down in figures. For instance, if you find that the Thal Project will give us a benefit/cost ratio of 1.5 but we cannot sell securities for it, the jute mills will give us a benefit/cost ratio of 1.4 but we can sell securities for it — you can hardly then put it down in terms of money, how much you would want to add to that 1.4 because you can sell securities. That is a matter of judgment. But I think that if you deal with projects which result or could result in saleable securities, you should certainly, for any economic appraisal, make a point of that. Bear it in mind, that that is an argument for it. If we have many such projects which result in saleable securities that may help you in making considerable progress towards the development of a capital market. It is one of the chief conditions of economic development.

(c) Self-liquidating projects

Finally, and thirdly, in this list of exceptions from the general rule I now come to the distinction between projects that are revenue producing, between projects that are neutral in that respect and projects that are the opposite to revenue producing, that require more money after you have finished them instead of returning the money. If you build an electric power station, you get electricity which you can sell and you get revenue out of your project, and usually the revenue that you get is much greater

than the cost of operation of maintenance. You get a net return from the project which you can use to repay your initial expenditure. At the other extreme, are for example, hospitals. Assuming that treatment is free, you get no return. On the contrary, you may have a heavy cost of operation. In the case of a hospital for instance, on the average, you have to allow at least 40 to 50% of your initial capital expenditure as your annual operational expenditure. If you build this expensive hospital now, but fail to provide the money for its operation, then you have wasted your resources. It is one of the weaknesses of many economic development programmes that very often they make insufficient allowance for the cost of maintenance and operation. That is why Dr Lund in his lectures rightly stresses that you should not only study the cost of establishing the project but take the cost of establishment jointly with the cost of operation and maintenance, that you should look at the probable life of a project and compute your benefit/cost ratio over the whole probable life of the project.

Now the question is "Should a project, be moved up in the scale of priority because it is revenue producing"? From the general approach to economic development presented in this course, you will probably be able to give the general answer to that question yourself. It should not affect priorities. If a project is productive in the sense that it benefits your economy as a whole, if it increases your national resources for future development—that is the test of a good project. When that test is satisfied, it ought not to matter whether the project is directly revenue producing or not. In other words, it should not matter whether the project is directly productive, in the sense that it pays for itself, or whether it is indirectly productive, in the sense that it increases your output elsewhere. But, like all rules, in economic life there are practical circumstances where you might want to reconsider that general statement. The fact that a project is revenue producing can be an important consideration where the revenue obtained from projects may be a substitute for a poorly functioning machinery of taxation.

XXIII Should Projects be Self-liquidating ?

This brings us to one of the most important questions in our field, namely "Should projects be self-liquidating"? Now I would like you to note first of all that the problem as I deal with it now, is different from the question that you ask in your benefit/cost calculations. I am not asking "Could the project be self liquidating"? What I am asking now is "Should it repay itself"? Should it be a settled aspect of development policy to cover the cost of development projects, from their own proceeds, if that is possible? Or, to put it differently. If a project is sufficiently directly productive, should it be made self-liquidating?

In answer to that question, there are a great many arguments. In fact, although not usually in connection with development policy, there has been a great deal of economic discussion around this question. I shall give you some of the arguments to be considered, arguments that are in favour of this course and arguments that are against this course. Then, I will try to

summarise the arguments and see which way the balance of the argument runs, and link it up with the principles which we discussed in our previous lecture

REVENUE FROM PROJECTS AS A FORM OF TAXATION

The policy of covering the cost of development projects from their own receipts, wherever that is possible, amounts, of course, to a form of taxation. The revenue that you get from your development projects helps you to balance your budget. It is an approach to what I said was a desirable condition in underdeveloped countries, that is at least a balanced budget or, if possible, a budget surplus. If your current cost of operation and maintenance not counting the capital cost, of an electricity project, would be covered by selling electricity at 3 annas a unit, but you sell it at 9 annas a unit in order to cover the capital cost of your project--economically you behave in exactly the same way as if you impose a sales tax or consumption tax of 6 annas on each unit of electricity. In other words, to have a policy of making your project self-liquidating amounts to a specific form of taxation which must be judged on its merits. It may be a good tax, or it may be a bad tax, compared with the alternative income-tax shall we say. In case of that kind you would have to weigh the advantages and disadvantages of the two types of taxation. What is the type of tax that reduces consumption most easily? What kind of tax is least discouraging to productive investment etc?

Once you reduce the problem to that point, it becomes a question of the benefits and merits of two different types of taxes. Is the money I take away from the users of my project by charging them a high price in order to cover my capital cost, a greater help to my development programme, in eliminating the competing demand for resources, than the money I could take away from people in some other way--not necessarily from the same people, but from some other people in some other way? For instance, you may find that the users of electricity are productive enterprises whom you want to encourage. It may be that if you sold them electricity more cheaply, they would make bigger profits, if they made bigger profits, they would save their profits. On the other hand, you may find that if you collect the money by income-tax, it will fall, shall we say, on land owners, and these land owners in order to pay the tax, would reduce their consumption, perhaps their consumption of imported commodities so that you get some relief in your balance of payments. If that is the condition, evidently the balance is in favour of not making your project self liquidating, but cover the capital cost of your project from the proceeds of general taxation. There would be no economic case at all for insisting that your project must be self-liquidating. You are only hurting yourself if you do it as a matter of principle. It is not a matter of principles, it is a matter of expediency. Is it more expedient to cover the capital cost from general taxation or to cover the capital cost from the proceeds?

But, of course, it may be that there is no alternative. You have got to take into account the administrative possibilities. It is no use taking

this problem as a problem of economic theory. In underdeveloped countries quite often there is no alternative. It may be very difficult to have an income tax, the machinery may not be there, collection may not be possible. If there is no alternative, then, in general, if you can catch the users and beneficiaries of your project in such a manner as to recover the capital cost of your project from them, it will be a good thing to make your project self liquidating. It follows from our general principles of keeping taxation high, of reducing competition with your development programme in order to avoid inflation. If you have no alternative source of taxation from which you can cover the capital cost of your project, and yet you still fail to recapture the capital cost of your project from the users of that project, you are following an inflationary policy. You spend money on the capital cost of your project and you fail to take money away from other people. Thus, the result of our first argument is, that you cannot tell whether it is a good policy or a bad policy to make your project self-liquidating, unless you know what (if any) the alternative possibilities of taxation are. If there are no equally good alternative possibilities of taxation, it would probably be good policy to make your project self-liquidating.

The second argument in favour of making projects self-liquidating is one of fairness. It seems fair that the people who benefit from particular projects, should also pay for these projects. Now let us look at this argument a little more closely. Presumably the purpose of economic development is to benefit your country, to increase the national income and thereby increase the resources that you will have available for future development. Well, if that is so, evidently there is no particular reason why the beneficiaries of a particular project should pay for the project. The project has been undertaken, presumably it is a good project, it benefits your economy as a whole. Otherwise it should not have been undertaken. But if it benefits your economy as a whole, there is no reason why it should not be covered by taxation or other forms of financing, that come from the economy as a whole. If you argue that the beneficiaries must pay you assume in your argument that it is right to restore the relative income position of the various groups of your population which existed before you undertook your project. If you say "These people benefit from my project, therefore, I must take the money away from them again, make them pay for the capital cost of the project", you really argue that no one should be any better off than before in relation to anyone else as a result of the project. Now that is not necessarily true. It does not follow that because you benefit certain people by your project, that you want to get the money back from them. May be those people whom you benefit are the people whom you want to benefit. May be you want to see them better off after your project. The government of an underdeveloped country, like any other country, is to some extent concerned with income distribution. It does not necessarily follow that a government has automatically to accept the income distribution that existed before the initiation of a project, as a natural fact. It is the job of a government to try to shape income distribution to some extent, according to the requirements of economic progress and economic development.

If a project is going to benefit the whole economy and not only a particular group of people, the benefits are usually spread over the whole

economy. And even if there are particular groups of people whom you can single out as beneficiaries of the project, it still does not follow that you got to put them back again by asking them to pay for the capital cost of the project. These two decisions are unrelated decisions. You may find in your study of projects that it benefits certain people. But then you still will have to ask yourself "Is it right that I should ask these people to pay for this project?" It does not follow automatically. Supposing the people who benefit from the project are industrialists or farmers—the type of people whom you want to benefit. It may be wrong economic policy to make them pay for the capital cost of that project. It might promote economic development more effectively, if you cover the capital cost of that project from general taxation, and leave those first groups to enjoy the benefits of that project without specially contributing to the capital cost. The two questions are to be studied separately. The normal practice is to jump from the one conclusion to the other without any investigation. It is wrong. It may make you miss a great opportunity for constructive economic policy.

MEASURE OF THE BENEFITS OF A PROJECT

A third argument that is often mentioned in favour of covering the capital cost of projects from the users, is that unless you do that, you cannot tell whether your project has been right or wrong. Now that argument is not very strong, a government which undertakes a public project and which has a practical monopoly of the things that are produced by the project can always make a project self liquidating by raising the price. For instance, if you have an electricity project and you have the practical monopoly of electricity in that district, you can always cover the capital cost of your project by raising the electricity charges. Supposing your cost turns out a little higher, supposing you make mistakes in the execution of your project and it costs you twice as much as you reckon, you can still make your project self-liquidating by charging twice as much for electricity, or for water, etc. But it does not make it a good project. A project is a good project if it adds to the national income of your country more than the total resources that you put into it. Whether you can manage to cover the capital cost from the prices of the things that you produce in your project, has no direct relation to the quality of the project.

The real reason for that is that the extra money which you recover by raising the price of your electricity, is not an extra benefit. You should not count it as a benefit of the project. That money is a "transfer". The people who have to pay the higher prices transfer money to the government. It is putting money from one pocket into the other, but not a real benefit. The benefit of a project is not necessarily measured by the money prices of the product because, within limits, any government can make those prices what it wants them to be. It does not make a project a bad project if the selling price of the product is kept low and, therefore, the project is not self-liquidating. It does not make a project a good project if the project can be made self-liquidating by raising the price of the product. The test of the quality of a project is in the increase in real goods and services that is produced with the help of the project. The money that the users of the project pay over

to you is not a benefit. It is a book-keeping method of putting money from one pocket to another. In other words, when you calculate the benefit/cost ratio of an electricity project it would be absolutely fallacious in your own thinking to try to compute your benefit from that project by working from the prices for the electricity which the users are going to pay. The prices may be low—in that case your project comes out to be much less beneficial than it really is. Or the prices may be high—in that case the project comes out much more beneficial than it really is. The proper thing to enter into the benefit column among the benefits is the extra production that you expect will take place as a result of the increased provision of electricity. Of course, when you compute the value of that production you have got to be very careful to enter the net value of production, minus the labour and raw materials for producing the output.

The only way of telling whether a project is good or bad is the technique which we are trying to develop here at this Centre. To go very carefully into the details of the project before we start on it. To try to work out to the best of our knowledge the benefit and the cost of the project in real terms, of the extra output that you hope to get. And to see if it seems to you not only a good project but the best project you can undertake. If it is better than any alternative project, then you can go ahead with it. And then the second question arises, a separate question which has nothing to do with whether this project is good or bad, "What shall I charge for the thing I am going to produce in this project? What shall I charge for the electricity? What shall I charge for the water? What shall I charge for the housing? What shall I charge for the land which I am going to sell to farmers?" Those are questions which have to be answered on their own merits. That is development policy. It may be sound in certain circumstances to keep those prices deliberately low, encourage your industries by selling them cheap electricity. That does not make your project a bad project. In other circumstances, it may be good policy to charge a lot for your electricity. It may be a very good form of taxation. In that case, by all means, charge twice more for your electricity than you would need to cover your capital cost. Make a big surplus on your project. That may be sound economic policy in certain conditions, but it does not make your problem any better than it would have otherwise have been.

You can assume that something is wrong with the presentation of a project which tries to sell you a project because you can recover more money from the user than you put into it. That is not an argument at all. It is equally wrong, if a group of persons, whoever they may be, inside a country or outside a country, try to tell you, 'It is a bad project because you cannot recover the money from the users'. Whether a project is good or bad is one problem. That is what we are trying to discuss here in this Centre. Whether you should or should not recover the money that you put into a project is a different matter that has to be answered from an entirely different analysis of the situation. As long as you keep these two problems clearly apart in your own mind, I think you have made enormous progress in clarifying your thinking on this subject, in presenting the benefit/cost of a particular project in a logical manner.

FULL UTILIZATION OF PROJECTS

Now let me mention another aspect of this problem, which has played a big part in the general economic literature, although its application to underdeveloped countries is not equally great. Let us assume that you build a new railway from Lahore to Quetta. Supposing it cost you Rs. 1,00,00,000 to build it, and you reckon that you can cover your annual cost of operation and maintenance of your railway by selling a ticket from Lahore to Quetta for shall we say, Rs. 100. But, if you want to cover the capital cost of your railway, you would have to charge Rs. 200. Now your problem is "What shall I charge for the tickets? Should I charge Rs. 100 or Rs. 200?"

Supposing you decide to recover the capital cost of this project and charge Rs. 200, but further supposing now that if you charge Rs. 200 very few people will want to go from Lahore to Quetta? That is a possibility. Rs. 200 is a lot of money and may be there are lots of people who would like to go to Quetta but not for Rs. 200. Therefore, your trains run to Quetta half empty. But if you charge, say, Rs. 125 your railway would be full. Now if that is the situation, then as a matter of general economic principle, you should always charge Rs. 125. Then the case for recovering the capital cost of the project from the users of the project is very poor. If you are obstinate and you say, 'I am going to charge Rs. 200 for this ticket' and your trains run to Quetta half empty—well, let us see what you have done.

First of all, there is economic waste, because there are lots of people who would like to get to Quetta, and to whom that is worth Rs. 125. It does not cost you more than Rs. 100 to take them there because the railroad is built already and it only costs you Rs. 100 to operate. Yet they cannot go to Quetta because you insist on charging them Rs. 200 which they will not pay. Further, there is economic waste because in the attempt to cover your capital cost, by charging Rs. 200, you will not succeed. You will only cover your capital cost if people pay Rs. 200 and if the railways are full. That was the assumption on which your calculation was based. If you try to charge Rs. 200 in an attempt to cover your capital cost, and the railways are half empty, well, then in fact you will not cover your capital cost. You are doing others harm without doing yourself any good. You are cutting off your nose to spite your face. If you say 'I will not take these people to Quetta for Rs. 125 because in that way I do not recover my capital cost on the project' you are hurting them and you are hurting yourself.

Therefore, the general rule always is that where the project is already constructed, the services of that project should always be set a price to ensure the full use of the project, whether or not in that way you recapture the capital cost of the project. You have to go into the demand side of it. It may be that if you charge the full price you would find that there will be no demand for it. If you are faced with that situation, it is always wrong to pay too much attention to the capital cost of the project. Then it is better to say "We will let it go. True, we will not cover the capital cost but we must ensure the full use of the project, we must sell our tickets at Rs. 125." In that case it would be wasteful to try to make the project self-liquidating.

Now I said before that this case may not apply so much in underdeveloped countries. In underdeveloped countries, in general, the situation will be that you will not find it very difficult to ensure the full use of your projects. For instance, there is such a scarcity of electricity that even when you have new power plants there will still be a scarcity. You will never be worried about selling your electricity. Provision of railways is so scanty that your railways are nearly always fully used. You have only got to go to the railway station here in Lahore to watch the trains going out to convince yourself that the railways are nearly always full. You have a different situation here because of the over-all scarcity of provision. Hence, in underdeveloped countries you will nearly always find that you can make your project self-liquidating if you want to, and ensure its full use at the same time. What I wanted to point out was that even though you will very often be able to make your project self-liquidating, it does not follow that it is right to do so. Very often it is better development policy not to, to have a group of projects that is not self-liquidating and to cover the capital cost of it by general taxation. That is the way in which a number of countries have deliberately promoted their economic development.

XXIV Appraisal in Real Terms—Avoidance of Double-counting

Now, I would like to add one other step to our analysis of development projects—the importance of appraising projects in real rather than monetary terms. It is not a new point. It has come up all the way through in our discussions. But I think it is always very important in considering a project or a development programme as a whole, to have in your mind all the time the possible differences between real resources and the money items that you enter in your calculation. In our calculations, we assume that money items represent the real resources. But that is not always true. In particular, I would draw your attention to three particular respects in which your money calculations have to be adjusted for an economic appraisal of a project.

'TRANSFER' ITEMS

The first is the case of "transfer items". A transfer item is a money transaction to which there is no corresponding movement of real resources. Normally if you pay a certain amount of money to get a certain amount of goods, the goods move one way and money moves the other way. I would like to draw your attention to the fact that there are certain money payments which do not correspond to movements of goods or services, which are purely monetary or financial transactions. Some of these money payments are very important items in development projects. For instance, let me take the item of compensation. You need the land and you pay landowners a certain amount of compensation. Supposing there is a certain amount of land that is not used and you pay money to buy it. That is part of the money cost of your project, you enter it on your cost side. But it is not a real cost of the project. If the land that you want to flood by the reservoir in your

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flood control scheme is unused and does not produce, you do not lose anything in the real sense by flooding it. In terms of money you probably have some expense, because the land may be privately owned and you may have to pay some compensation for it. But there is no real cost. This compensation payment that you make to land owners is a transfer item.

Now in any economic appraisal of a development project it is important that at each particular point you should ask yourself "Is this item a real cost in the sense that it uses up current resources, or is it purely a transfer item, putting money from one pocket into another without any movement of goods?" If it is a transfer item you should leave it out of your economic appraisal. It is not part of your real cost, and when you work out whether your development programme fits into your available resources or whether it adds up to more than 100% of what you have got, that item should not be included because it does not require any resources. If you added compensation payments to land owners as part of the cost of your programme, and then you find your programme is too big and you cut this particular project out, you are under an illusion, because compensation payments to land owners have not to be squared with your available resources. In other words, when I talked about fitting development programmes into available resources, I want to confine that statement to that part of the expenditure on development projects that represents the use of real resources. There should be some statement in the final summary of the project which states clearly, what part of the total money cost that you put down represents the use of current resources, and what part represents things which do not require real resources. From the economic point of view, that is a very important distinction—and, I may add, a distinction that is very rarely made. Quite often there is great difficulty in the economic appraisal of development programmes and activities because of a failure to distinguish between these two kinds of costs.

COMMODITY TAXES ARE NOT BENEFITS

My second illustration is the case of a commodity that is taxed. Supposing you have a tax on cigarettes, and you consider the benefit/cost ratio of a combined project to grow tobacco and make cigarettes. On the benefit side, you will want to put down the value of the cigarettes. The sales value of the cigarettes may be, shall we say, Re 1 a box, with tax, annas 8 is the price without tax. Now what is the right figure to use in that case? I hope it is quite clear that annas 8 is the right figure. If you put down the tax from the cigarette as part of the benefit of the project, you are greatly overrating the value of the cigarettes. The true market price of the cigarettes is As. 8. The other As. 8 is the tax that you levy on the cigarettes. If you do not levy it on cigarettes, then you can collect it in some other way. Taxation should never be put down among the benefits of projects. The value of goods and services which you produce with the help of your project, should always be put down at "factor cost"—market prices exclusive of taxation. Remember that wherever you deal with things that carry a tax—and I would remind you that a tax may appear in many different forms.

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Take our electricity project again. Supposing the electricity costs you one anna per unit to produce, but because you have a monopoly, the consumers have to pay, and instead of selling it for one anna, you sell it for three annas. It would be grossly misleading to put down the benefit of the project by assessing the value of electricity at three annas per unit. You should put it down as one anna per unit, exclusive of the excess which is like a tax.

Of course, having done that, it is perfectly proper to add another sentence or descriptive note to say that your project will not only enable you to produce thirty many thousands of cigarettes, but that it will also enable you to collect that much tax on these cigarettes and that that might be the most convenient way of collecting taxation. That is certainly an argument in favour of the project. That is one of those cases that I discussed before, where financial considerations might play a part in moving a project higher up in the scale of priorities. I am not saying that you should suppress the fact. But it is not part of the direct benefits of the scheme. When you work out the benefits you should put these things down at market prices exclusive of taxation.

SUBSIDIES ARE NOT COSTS

A third case of that kind where it is important to distinguish is the case of subsidy. This is the opposite case to taxation. Again I hope you all see that when you have an agricultural project and it produces food which is sold at subsidised prices, you have got to enter, not the subsidised price, but the true market price. In the case of subsidised food, you would under-rate the benefits of the project otherwise. In general, you have to assume that the price of a commodity measures its value. But there are cases where you can be quite certain that it does not, for instance, where the price includes an element of taxation or subsidy. Where prices are controlled by law, I think the only sensible procedure from the economic point of view is to try to form your opinion if you can, of what the true market price without control would be. If you simply put down the controlled price, you would not appreciate the true value of the project. In the case of subsidies, you simply add the subsidy to the actual price and then you get the true price. When you have a controlled price, it is much more difficult because you cannot tell exactly what the true price would be. Then you have to go through a process of economic analysis. You have got to try and study the demand curve for the product and the supply curve for the product, and then try to find out what you think the price could be without control.

ILLUSTRATIONS

Now let me give you a few illustrations of these points. They are all points that have already come up in some way in the course of our work here. You remember in the presentations of the storage problem the question arose whether to include among the benefits of the scheme the saving in port charges. Remember we calculated that it would speed up the turn-about

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of ships in Karachi harbour and therefore the shipping lines would save so much money in port charges. We agreed that it should not be among the benefits. It is a transfer item. A port charge paid to the Government does not use up any real resources. It is a tax. Remember—I said a tax may appear in many different forms. If I have less income from taxes because I speed up to turn about of ships in Karachi harbour, to put that down among the benefits of the project is quite wrong. It is not a real benefit. You do not save any real resources by saving the shipping line taxes. It is putting money from the pocket of the Government or port authority, into the pocket of the shipping lines without any movement of commodities.

Again you remember when we discussed the flood control project, there was some question of including among the benefits of the scheme, the value of the increased crop which you would get as a result of the flood control scheme and further the increased value of the land as a result of the bigger crop. The value of the land should not be counted among the benefits because that would be double counting. The increased value of the land is due to the increased crops that you can grow on it. Therefore, if we put down on the benefit side both these items separately, and then add them up, we count the same thing twice over. Alternatively you can say that the increased value of the land is a transfer item. If an owner gets more for his land because it is protected from floods, the owner will get more for the land but it means that the buyer of the land will have to pay more, and the two things cancel out. Since you assess this project from the public point of view, not from the point of view of the present owner, but from the point of view of the community as a whole, which includes the present owner and the new owner, these two things will cancel out. Increased value of the land is not part of your benefit. The benefits are measured by the increased production that you get, the increased crops. The value of the increased value of the land is a transfer item derived from that increasing production and therefore you should not count it.

It is not saying that the increased value of the land is irrelevant. Far from it. You should be aware of the fact that if you protect a certain area from floods, you increase the value of land to the present owners. You should consider the possibility of making your scheme self-liquidating to some extent, by getting the beneficiaries to pay for it. Possibly have a betterment tax on the increased value of the land. These things are important, they are worth going into. You should be aware that you will benefit certain people and follow that up by looking into certain possibilities of financing your scheme. But you should not include it among the benefits of your scheme in an overall economic appraisal.

Let me give you yet another illustration and one that is also very important. A project may involve the nationalisation of a certain asset, and you have to pay compensation to the present owners. Well, in case you do not use up this resource, if you just take it into public ownership, there is no real cost of production involved. Compensation payment to the present owners for things you take over but do not use up, are not part of the cost of a project. Such compensation payments can be very large and very important. There are projects which probably should have been

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undertaken and which were not undertaken because they involved big compensation payments to present owners for resources that would not be used up which compensation payments were entered on the cost side. That is an error, a false calculation.

Again I am not saying that these things should be neglected, that they are unimportant. For instance, compensation payments are a public charge. They involve problems of financial technique, of taxation, of finding the money. They involve certain financial problems. But they are not part of the social or national economic cost of the project. In your general calculation of the benefit/cost ratio they should not be included. Of course, if you buy something from present owners and use it up, then you should enter it because real resources have been used. But if you simply compensate for something that remains as it was before then it should not be included.

I would like to mention another point and that is the case of technical obsolescence. You will remember the point in connection with the Thal project—the distinction between physical and technical obsolescence. For instance, if you use a tractor for the Thal project, the tractor may last you for ten years. So you ask: "Should I write it off in ten years?" But then, someone comes along and says, "True, the tractor will last for ten years, but in five years' time, it will be practically obsolete. In five years' time, there will be a better tractor on the market and no one will want to have these old tractors. Therefore, we must write off this tractor in five years instead of in ten years." From the economic point of view, for the general appraisal of a project, that is wrong. Technical obsolescence is not part of your real resources. The thing to consider in the case of machinery or any item that you need for your development project is physical obsolescence. If the tractor lasts for ten years on the project, and if the project goes on for ten years, then the only real cost to your project is 1/10th of your tractor each year. The only thing to add to the annual cost of the project is 1/10th of the tractor. If you decide after five years' time that there is a better tractor on the market now, and decide to replace your previous tractor even though it gives you service for another five years, well, that is your own affair. You are not forced to do that. If you decide to buy the new tractor it is presumably because, on the basis of your benefit/cost calculations that you undertake in five years' time, you arrived at the conviction that the use of a new tractor will be cheaper to you than the continued use of the old tractor. But at the present moment, when you compute the cost of your Thal project in the next ten years, that does not enter into it. Technical obsolescence and physical obsolescence are in two different categories. Physical obsolescence is part of the cost of a project. It should be included in the economic appraisal because the services of the tractor are used up for the project. But technical obsolescence is not the use of a physical resource. Therefore, in the benefit/cost calculations you should certainly always distinguish between physical and technical obsolescence and not lump them together.

On the other hand, technical obsolescence, although not part of the cost, is an important factor. Make it a separate item for itself. You could point out in a note to your calculation: "We have allowed for ten years' life for

a tractor. But in fact it is quite possible and likely in view of repaid technical development in producing tractors that we may decide to replace our tractor in five years' time. We may have to bear in mind the need for more expenditure in five years' time if we decide to buy a new tractor. That is alright. It is not part of the cost of your project. It is a new project. If you decide to buy new tractors in five years' time, you have a new development project that must then be considered on its merits in five years' time. But it only leads to confusion to mix it up with your present project. At the end of the five years' time, if you decide to buy a new tractor and scrap the old one, then you cannot be any worse off than you would have been with the old tractor continued. Therefore, if you decide to put down your physical obsolescence, you will never under-rate your expenses. If you put down your tractor at 1/10th of the cost each year, you cannot go wrong.

XXV Contribution of Foreign Finance to Development Programme

So far in this course we have mainly discussed the problems of fitting development programme into available resources, in so far as those available resources are limited by domestic production. It may be useful, before bringing this course to a close, to consider briefly the possibilities opened up, if domestic resources can be supplemented by foreign finance, and development programme can thus be made to add up to more than 100% of the available domestic resources.

I think it is useful to distinguish the various uses of foreign finance; it promotes clear thinking to keep them apart. It is possible to distinguish seven different uses of foreign financing.

MAKING DEVELOPMENT POSSIBLE

(1) In the first place, there are certain underdeveloped countries and territories which are so underdeveloped, or so completely undeveloped, that there is no margin at all over and above immediate consumption needs. Any development, any capital formation of whatever kind, in such cases presupposes an influx of capital from abroad. The case, perhaps, is well illustrated by a small and poor island in which suddenly some important phosphate deposits are discovered. There is no possibility to exploit these deposits other than by an influx of foreign capital, there are no domestic resources, the island is so poor that it is impossible to think of domestically financed development. Such cases where complete foreign financing is an absolute precondition of any kind of economic development may be comparatively less important, but I think we can generalise this case a little. Even in underdeveloped countries which are not so completely undeveloped and which have reached a more intermediate stage in economic development, there are some kinds of development which are necessary, and yet so capital intensive and so costly, that if they are to be undertaken at all, they must be undertaken by means of foreign finance. Even where possibilities of domestic savings and domestic capital formation exist, they are so small in scale that they cannot conceivably tackle some of the capital intensive development projects that ought to be included in a sustained programme and without which continued development may not be possible. This case

is similar, conceptually, to the first case, but it is more widespread and important. Of the areas in the world which are generally listed as underdeveloped, that is Asia (except Japan), Africa, Latin America and certain parts of Europe, perhaps half (by population) are in that condition, although they have domestic savings and are, by no means, incapable of financing less costly development projects domestically, yet the domestic savings possibilities would be insufficient to tackle highly intensive development projects which may be required.

SPEEDING UP CAPITAL FORMATION

(2) The second function of foreign financing for economic development is to speed up capital formation. This may be an important consideration, for a number of reasons. It may be politically necessary. For instance, quite often conditions exist that if a certain thing can be done in five years, well, it will be done, but if it has to be spread over ten or fifteen years, it will not be done at all. One might say in that case, that the capacity of a country to sustain a given programme is limited to five years. This may be due to political reasons, the present Parliament may sit for five years, and one may be certain that this particular Parliament will sanction certain expenditures for certain policies, but one cannot be certain of what is going to happen beyond that. It may be due to administrative reasons, or to psychological reasons. The population may be impatient for a rapid increase in consumption. The point is that speeding up of capital formation may be not only useful but essential. Sometimes we can say that capital formation is either going to be rapid, or it will not take place at all.

Another relevant consideration is that rapid capital formation may be more effective than slow capital formation, this is a case which has been much discussed in recent years. It is quite possible that in economic development we get rapidly increasing capital returns as the scale of new investment is increased. If we start off in a big way and undertake simultaneously a series of complementary investments, development becomes much more effective and can be made into a continuous process by ploughing back profits and increases in output, whereas by starting off in a small way we may not get anywhere at all. The increase in output may be only just sufficient for the increased population, or for the increased consumption which may be politically necessary and, therefore, there is no cumulative development at all.

The case of overpopulated underdeveloped areas is especially important in this context. In such areas where there is heavy population pressure, it is imperative to develop rapidly, and also the type of development required in overpopulated areas is, generally speaking, much more of the capital-intensive type, for instance, industrialisation, other things being equal, is likely to play a more important part in the development of an overpopulated country, such as India, than it would in the development of a more scarcely populated country where there is no population pressure. In overpopulated countries it is important to attain a high initial speed of development, for the reason that slow development may simply lead to increased survival of population and not to higher standards *per capita*. The one chance—by no means a certainty, but perhaps the only prospect—

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of raising *per capita* standards of living may be to have, by any means, an initial improvement. At least from previous historical experience there are some grounds for assuming, or hoping, that such an initial improvement may lead to a fall in birth rates, that once development and industrialisation and urbanisation start and gain a foothold, the new ways of life may continue to reduce birth rates, and that from there on there is support from the population end for the attempt to improve standards *per capita*. Therefore, in an overpopulated country, the influx of foreign capital which helps to speed up economic development may be of special importance.

LONGER RANGE FOR DEVELOPMENT PROGRAMMES

(3) Then, thirdly, I should say that through foreign financing it may be possible to give capital formation a longer range. It becomes possible to plan for a longer time ahead, particularly if there is expectation of a sustained influx of capital from abroad. There is no longer need to lay stress on those investment projects which yield immediately disposable output next year or in two years' time, it becomes possible to look at the development programme more on the grounds of general efficiency and to include a number of long-term projects, if necessary. Thus, if foreign capital is flowing in, and especially if it can be relied upon to flow in, in the succeeding years, it may help to make the development programme more effective by including those long-term projects. You can either speed up your given development programme, as explained before, or else you keep your time-table, in which case you can broaden your programme.

MAINTAINING CONSUMPTION

(4) Fourthly, it may be said that an influx of foreign capital can be useful by maintaining consumption at a higher level than would otherwise be possible. The maintenance of consumption may be directly productive in maintaining the efficiency and productivity of the population. In that case, it becomes a technical question of whether this is consumption or investment. Some increase in consumption may well be an element of capital formation. In such cases, the maintenance of consumption itself made possible by an influx of foreign capital may be a direct contribution to economic development. In other cases, the maintenance of consumption may be a political or administrative precondition for development, because the government of an underdeveloped country may be politically or administratively incapable of restraining consumption, in that case, the choice would be either the influx of foreign capital or a degree of inflation which might be incompatible with sustained development. The increase in consumption may also be desirable in order to maintain a certain fairness between different generations, there is no particular reason why development which will benefit future generations should entirely be financed from the sacrifices of the first generation. By borrowing from abroad (and only thus), it is possible to shift the burden of economic development

from the present generation to the future generation. This may be preferable on grounds of general efficiency as well as fairness, because the future generation can be assumed to be better capable of carrying those burdens.

Perhaps a special case which might be dealt with here is where foreign finance is used not exactly to maintain consumption, but in order to maintain the foreign exchange reserves of a country during the course of development. This also can be an important function; just like the private firm may need a certain liquidity reserve for an effective conduct of business, so it is arguable that an economy as a whole is also more effectively conducted if there is a certain minimum level of foreign exchange reserves which can be used for bridging temporary balance of payments disturbances, for temporary speeding up of investment, or to make good temporary falls of exports, or for enabling a country to pursue freer commercial policies.

REDUCING INFLATIONARY PRESSURE

(5) Fifthly, apart from the maintenance of consumption, the value of the influx of foreign capital may lie in a reduction or elimination of inflationary pressure. In the case of consumption goods imported as a result of the capital influx, it is fairly obvious that the influx helps to relieve inflationary pressure. In the case of capital goods, it is a little more complicated, but at least we may say that if the influx of capital goods is financed from abroad, there will be less inflation (other things being equal) than if there had been the same amount of investment and development in an underdeveloped country without financing from abroad. That is to say with a given degree of development and investment, it is always true that an influx of capital goods from abroad has the effect of reducing inflation. Perhaps the best way of making the issue clear is to say that an underdeveloped country, if it uses foreign financing in the form of an influx of capital goods, can have more development and investment with a given degree of inflationary pressure, or, alternatively, it can have a given degree of development and investment with less inflationary pressure than would otherwise be the case—that puts the issue quite clearly. Of course, the two propositions are a reflection of the same economic mechanism. In practice the most likely combination is much more development and some more inflationary pressure.

The reduction of inflation may itself become the very objective for obtaining foreign financing, because under certain conditions deflation or the destruction of inflation may pay high dividends. Thus, a certain amount of money spent simply in reducing inflationary pressure may in certain conditions be more valuable than the same amount of money spent directly in development. In the case of Greece, at a certain stage in the recent great inflation, the policy was adopted to bring in gold—which is equivalent to foreign exchange—from abroad, in order to sell it domestically and absorb purchasing power in that way. That policy seems to have been reasonably successful in that case.

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REDUCING BALANCE OF PAYMENTS PRESSURE

(6) The sixth use of foreign finance which I should like to distinguish is that of reduced balance of payments pressure. At this stage we have to introduce the fact that foreign financing is not just money, not just coming over general resources, but that it is *foreign exchange*, command over *foreign* resources. Where foreign credits are available, that naturally leads to reduce balance of payments pressure in the under developed country which utilises foreign finance. It may also have an effect in improving its terms of trade. In stating this, I am not going to argue that the transfer mechanism from the capital exporting country to the capital importing country itself requires certain price changes favourable to the borrowing country. That was also maintained for some time, and is a big, important and difficult subject which can be argued one way or the other. What I have in mind, rather, is something fairly obvious, relating to those more political or bargaining or monopolistic elements that enter into foreign trade. If a capital influx relieves the balance of payments pressure on an underdeveloped country by not forcing it to pay for all its imports by as many exports, otherwise it would have to in financing a given amount of investment, the bargaining position of that country is strengthened. It can hold back commodities in stock, it can wait for favourable opportunities to sell, and in a number of ways the bargaining position of such a country is improved. Then if we assume that the underdeveloped country concerned is determined to have its given degree of development, and if we then consider the two alternatives—either to get loans from abroad, or finance the whole programme by a domestic effort (and, in the case of foreign exchange requirements, that means *exports*)—I think it is very probable that the use of foreign credits would improve the terms of trade of the under developed country, and raise its export prices relatively to its import prices.

Another way of looking at it—but which I think comes to the same thing—is that it enables the under developed country which uses financing from abroad for development, to that extent, to maintain higher exchange rates than would otherwise be the case, while the process of development goes on. Although the use of foreign finance for exchange stabilisation is now strictly taboo after the unfortunate experience of some of the earlier exchange stabilisation loans, it is quite possible that foreign financing may have not the intention but the effect, of maintaining higher exchange rates than would otherwise be possible, that, again, may bring a number of undesirable effects but it certainly has the effect of improving the terms of trade for the under developed country concerned.

INCREASES THE INTERNATIONAL DIVISION OF LABOUR

(7) Finally, the seventh and last use for foreign financing that I would list among its functions or effects is that it increases the international division of labour. The alternative may be either to import capital goods or consumption goods, especially the former, for development if the foreign finance is available, or else to make them at home if the foreign finance is

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not available. Some underdeveloped countries at certain stages of development would be technically in a position to make even some of their capital goods themselves. If that is the choice, then under certain conditions the use of foreign finance helps to maintain the international division of labour. Evidently, foreign financing helps in the international specialisation and international division of labour, by making it possible, instead of doing something itself (which presumably, by assumption or definition, the underdeveloped country is not particularly suited to do), to import these goods from abroad on credit now, paying for them later by exports (presumably of things which are more suitable to the underdeveloped country). It thus avoids the need for inefficient high cost industries which may become a permanent drag.

XXVI Common Defects of Development Programmes

I hope you will permit me to conclude this course, by appending the summary of the most common defects in development programmes, drawn up at a United Nations seminar on 'Formulation and Execution of Development Programmes', held in Puerto Rico in May 1950. I was privileged to participate in that meeting. You will want to study the full report which will soon be published. Meanwhile, the following summary seems to me a fitting conclusion to this course. You will recognise that most or all of the eleven points mentioned have come up for discussing here during the course to which you have listened. This is on what the meeting agreed.

LACK OF CONSISTENCY

Development programmes are not always consistent with the total financial resources available, or with the particular requisite types of finance available. Sectional or regional programmes tend to add up to more than available resources, this results either in starting more than can be completed, or else in a cutting down process which leaves an unbalanced set of measures.

PRIORITY FOR PUBLIC WORKS

Development programmes may tend to assign too much priority to public works projects relatively to such needs as improvement of food production and general raising of productivity.

EMPHASIS ON PUBLIC SECTOR

Since public investment is under much more direct control than is private investment development programmes tend to give too much attention to the public sector and too little to the private sector. This should

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not be allowed to weaken development in the private sector unduly, through diverting an excessive proportion of scarce resources into investment in the public sector

PAPER TARGETS FOR PRIVATE SECTOR

Development programmes tend to establish paper targets for the private sector, without providing for the measures required to assure that these targets are in fact attained. Alternatively, programmes sometimes are faulty in trying to do by public expenditure what would be equally or more suitable for the private sector

INTEREST IN SPECTACULAR PROJECTS

Development programmes tend to over-emphasize investment which takes the form of concentrated, large-scale projects, which are spectacular rather than basic, at the expense of scattered, small scale improvements, and necessarily requiring big capital investment, which yet in the aggregate may be as important or more important than a few big projects

NEGLECT OF SHORT-TERM REQUIREMENTS

There is a tendency to neglect short-term requirements in the desire to draw up long-term development programmes. A failure to solve present current problems may endanger the long-term objectives aimed at by the programme.

INSUFFICIENT STUDY

Major schemes are sometimes started without sufficient prior study, sometimes under political pressure or in understandable impatience to get things started. In general, both the selection of projects and the examination of individual projects will require careful analysis. Time spent in such analysis is not "wasted"

CONCENTRATION ON CREATION OF TANGIBLE CAPITAL

Development programmes tend to concentrate too much on specific expenditure resulting in the creation of tangible capital, to the neglect of improvements in institutions, in the domestic, economic and social climate and in the standards of the traditional government services

MULTIPLICITY OF CONTROLS AND INDUCEMENTS

In trying to secure attainment of private sector targets, development programmes tend to rely on a multiplicity of inducements and controls

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sufficiently harmonized with each other. Such measures may create unnecessary conflicts between private and public interest.

INSUFFICIENT WORKING CAPITAL (FOR PRODUCTIVE INSTALLATIONS)

Development programmes tend to concentrate too much on fixed investment and fail to provide sufficient working capital for the productive installations which they include. This may result in loss of productivity.

LACK OF CLEARLY DEFINED PRIORITIES

Development programmes often lack clearly defined priorities. The group agreed with the Sub Commission of Economic Development that "it does occasionally happen that without further inquiry one particular thing stands out as the supreme need at a particular moment, and in that case it is perfectly proper that such a particular project should be considered and promoted in isolation. This situation, however, will be the exception rather than the rule."

PART II
APPRAISING COSTS AND BENEFITS OF
DEVELOPMENT PROJECTS

BY
DR. J. THOMSEN LUND

APPRAISING COSTS AND BENEFITS OF DEVELOPMENT PROJECTS

I Introduction to the Course in Principles and Practices of Benefit-cost Analysis

To day we are merely going to get acquainted and try to outline a course of study for this class. We will do it jointly. You will teach me perhaps more than I will you

In general this course in benefits and costs is intended to cover the basic assumptions and principles involved in a benefit-cost analysis as they are applied to the formulation and economic justification of resource development projects. The principle subjects to be covered are objectives and purposes of economic analysis, the character of the viewpoint upon which analysis is based, definitions of benefits, costs and related terminology. Attention will be focussed on effects attributable to projects, the nature of secondary benefits, and a procedure for analysis of justification of proposed projects

The standards, problems and procedures involved in measurement of benefits and costs will be discussed. Measurement standards to be studied will include price levels, interest rates, period of analysis, amortization and salvage

The applications of the principles and procedures for analysis of benefits and costs will be discussed in terms of several projects including irrigation, flood control, watershed treatment and multiple purpose projects.

It makes no difference what country you are from, the procedure for determining costs and benefits is the same. It is a matter of measuring the costs of developing the project on one hand against the benefits derived on the other

As we go through this course we will try to apply what we learn to a specific project. The project we will use will be the Thal Project. It is largely a refugee colonization scheme. This project is one of a large number of projects that has been set-up for development by the Pakistan Government. It carries a priority rating of A 1. This project has several parts to it. It is combined with irrigation, road building and reforestation aspects

The total area covered by this project is about 2,000,000 acres, of which the Thal Authority plans to develop 900,000 acres, construct 1,000 villages and settle 25,000 families. They have set as their goal five years but that is too short a time.

The total scheme will cost about Rs 17,90,00,000 of which Rs 2,90,00,000 represents foreign exchange, part of which will be in dollars and part in sterling. After full development the project is expected to earn annually about Rs 3,80,00,000 from exports of wheat and cotton

The Thal Project is just an example of what constitutes programme planning and it is my hope that as we go through this course we will learn some of the fundamental principles in programme planning so that when you go back to your respective Governments you will be able to assist your governments with plans for the development of their resources, and if your country is a member of the World Bank and you should make application

for a loan, it is my hope that your project plans will be in good form when presented to the Bank.

Every project must be looked at from two points of view, first from the point of view of its technical and economic feasibility, that is, are the engineering aspects of the project sound and with the benefits return the costs of the investment? Secondly the contribution of the project to the total economy should be determined. This we call the "economic justification" of the project.

The economic feasibility of a project is determined by a financial analysis of project costs and revenues and a project is found to be economically feasible when such an analysis shows that project revenues will return the project costs under the terms and conditions authorizing the project.

You must remember in your planning work that projects should be planned so that its benefits will pay the costs.

Many people think that because the World Bank has a lot of money, they can just make loans without examining the projects. That is impossible because if we did that we might make loans on some project which was not right from an engineering point of view and benefits would not return costs. If we make such loans, the Bank would soon be out of money.

Basic to a consideration of the economic factors affecting project development is the economic environment in which these projects will operate. In general, the appropriate setting for project development, is one in which, over the long run, an expanding economy will require increasing amounts of goods and services to satisfy increased needs resulting both from population growth and higher levels of living. If you are to evaluate the project and its effects on the economy, with and without the project, this fundamental must be considered.

Benefit-cost analysis are not always the sole basis for approving or disapproving resource development projects. For example, where the need for a project arises from considerations of public policy other than economic factors, such as foreign policy or national defence, these considerations may govern. Even in such cases, however, since economic resources are limited in relation to need, benefit-cost analysis serve a valuable purpose in revealing the relative economic efficiency of such projects.

A great question for planners is just what kind of programmes to put in for economic development. Just how to evaluate competing or alternative programmes with regard either to allocation of limited public funds for resource development or the relative desirability of alternative programmes which may or may not have similar objectives in common. For instance in Pakistan, what is the best thing for the Government to do in providing sufficient food for the nation. The question to be answered is, what is the most desirable way of accomplishing this goal. Theoretically, this may be achieved in at least three different ways—by more intensive development of existing agricultural land such as the Thal Project, by development of new land, or by imports abroad. Each of these alternatives will vary in impact upon regional, national, and international levels, and will have varying effects in terms of financial requirements, foreign economic policy, and net costs to the nation.

You can see that often times there are problems of government economic policy which are beyond the responsibility of resource planners and resource development agencies

At our next meeting we will discuss how the World Bank goes about examining projects and making loans

II Lending Techniques of the International Bank

To day we are going to discuss the lending techniques of the International Bank for Reconstruction and Development. The International Bank for Reconstruction and Development, since the start of operations on June 25, 1946, has lent about \$750 million in 13 countries during a most difficult period of world-wide economic development, and no serious questions have been raised concerning the soundness of these commitments. Much interest has been expressed in the methods employed by the Bank in approaching the problems of post-war international lending and in processing loan applications. There is nothing mysterious about the techniques used by the Bank. Some are new techniques based on three years of foreign lending under highly unstable conditions, others are the application or adaptation of old and proven methods to the conditions that must be met to day.

Prior to dealing with the subject in detail, I should like to point out the principal objectives of the Bank's lending techniques and practices. These are to insure that loans are within the capacity of the borrower to repay, that the projects financed are productive, and that, once made, the loans will be used in a manner agreed upon between the Bank and the Borrower.

In general the processing of a loan falls into four stages, namely (1) preliminary exploration, (2) critical examination, (3) negotiations, and (4) administration. It is not always possible to draw a sharp line between the various stages, but a brief discussion of the operations performed in each will best clarify the techniques and practices employed by the Bank in the course of making a loan.

Preliminary exploration begins on the first approach for a loan. At that point, the Bank seeks to determine whether the financing would come within the scope set by its policies and the requirements of its Articles of Agreement. For example, the loan would be barred if the project to be financed is located in a non-member country, if it is in the nature of a short-term commercial transaction, if the borrower could obtain it from private capital sources on reasonable terms. Further, where the prospective borrower is other than a member government the Bank will not seriously consider a loan without some indication that the member country concerned, will, as required under the Bank's Charter, guarantee payment of principal, interest, and other charges. This policy serves the interests of the Bank and the borrowers as it saves time and effort that might be spent in submission and examination of projects for which no loan could be made.

In some instances, particularly where the less developed countries are concerned, no specific project is presented for consideration of a loan.

Instead, the Bank is asked to survey the country's needs with a view to determining which sectors of the economy should be developed and an order of priority for the projects

The critical examination stage begins if the loan request meets these first general tests and if the project appears to warrant serious consideration. A careful investigation is made by the Bank of the economic and financial conditions of the country and of the borrower, and a study is made of the project. In examining the project, surveys are made of the sources and amount of local capital available to meet local costs, and of the availability of labour including skilled and management personnel. The technical feasibility of the project is thoroughly investigated and experts examine plans, market surveys and financial arrangements. A thorough appraisal is also made of all factors affecting the borrower's credit worthiness and its ability to complete the undertaking. In examining the economic and financial conditions in a country attention is focussed on the following types of questions:

Can the country properly assume additional foreign debt for a project of the type under consideration? Are the financial and economic policies of the government conducive to sound development and the success of the project? If not, what steps should be taken to remedy the shortcomings? Will the project contribute effectively to the immediate development of the country, or are there other projects with a higher priority? What effect will the project have upon the ability of the country to earn sufficient foreign exchange to repay the loan?

In short, the Bank recognizes that the prospects for success of a project and the borrower's ability to service a loan will be substantially influenced by economic and financial conditions of the country in which it is located, and that these must be taken into account.

An investigation centred in an office in Washington cannot yield all the facts and the full appreciation of local conditions needed to make the complex decisions required in an international loan. Consequently, the Bank has adopted the practice of sending skilled observers to make "on the-spot" investigations of the project and the country concerned. Personnel for these "field missions" is drawn mainly from the Bank's staff but outside experts often are employed for particular technical investigations.

All of this effort and expense devoted to processing loans is in recognition of the Bank's responsibilities to the member countries which supplied its capital and to investors who have purchased its bonds. It is the aim of the Bank to insure that its loans shall contain the minimum of risk consistent with its objectives and that they shall contribute as much as possible to the borrowers' economic well being.

If the loan application passes the critical examination stage, the borrower is advised that the Bank is prepared to negotiate a loan agreement, which sets forth the terms and conditions on which the loan is granted. Negotiations are carried out by a Loan Officer of the Bank, assisted closely by a working party, and representatives of the prospective borrower. Where the borrower is not a member government, the provisions of the required guarantee agreement are negotiated concurrently.

Four departments are directly concerned with the processing of loans. The Loan Department is responsible for the general development of the loan programme and policies. It receives and examines loan inquiries, insures that the necessary appraisals and investigations are made, prepares reports and recommendations concerning loan requests, and conducts negotiations. The Economic Department makes the economic studies needed for determination of loan policies, and prepares comprehensive reports on the credit worthiness of borrowers. It also participates in field missions and keeps abreast of economic trends which may affect the loan or the project.

The Legal Department drafts the loan and guarantee agreements and supplies legal advice at all stages of the proceedings. It also confers with borrowers on legal matters, participates in loan negotiations, and when necessary a representative of the department may accompany a field mission. The Treasurer's Department maintains accounts and financial records and handles disbursement of loan proceeds, collection and end-use supervision. It advises as to rates of interest and other charges, repayment terms, and other financial conditions as well.

Proper co-ordination of these interdepartmental activities is essential for the success of the Bank's lending operations. This is assured through assigning a member of each of the four departments to a working party, the members of which keep in constant touch on all matters connected with a particular loan throughout all four stages of its processing.

Responsibility for direction and supervision of loan operations is vested in the Loan Director, who acts under the general direction of the Bank's President and Vice-President. On important policy matters he consults with the Staff Loan Committee, which is composed of the Vice-President, as Chairman, and the directors of the four departments concerned with lending. This committee follows the progress of all loan negotiations and receives all reports prepared by the Bank staff or outside consultants. The President, who is the Bank's Chief Executive, has final responsibility for recommending action on loan applications to the fourteen members of the Board of Executive Directors. The latter represent the 48 member estates, and by their vote accept or reject recommendations on loans. Throughout the course of loan negotiations the board is kept informed of major developments and is asked to consider policy matters.

On completion of negotiations, drafts of the loan and guarantee agreements and other pertinent documents are submitted to the Executive Directors by the President along with his recommendation. If the directors vote favourably, they empower the President to sign the agreement committing the Bank to the loan. As an indication of the smooth working character of this whole loan procedure, I would like to point out that every loan recommended by the President has been granted.

The Bank's interest in a loan does not end with the signing of the loan agreement. It is at this point that administration begins, and the Bank is developing special procedures for following the progress of the projects and for maintaining effective contacts with its borrower during the life of all loans. Instead of turning over all the proceeds to the borrower, when the loan becomes effective, the Bank retains full control over all undisbursed

funds. It will release them only upon presentation of documentary evidence that the money has been or will be spent on items agreed on for the project. A special "Disbursement Section" is attached to the Treasurer's Department to handle all details.

One of the significant practices adopted by the Bank is that of supervising the "end-use" of its loans. Through its end-use procedure, the Bank ascertains that goods purchased with loan proceeds are properly installed and that all other steps necessary to the progress of the project are taken by the borrower. This activity has been assigned to a special "End Use Supervision Section" of the Treasurer's Department. In fulfilling their function, end-use supervisors make frequent on-the-spot inspections of the projects and constantly study progress and periodic reports received from borrowers, engineers and other sources.

It is the establishment and development of close and friendly contacts with the borrower, however, that is the most important of all activities during the administration stage of a loan. Through maintaining a close relationship with its borrowers, the Bank is able to appraise developments which may affect the economic position of the borrower and the position and security of its loans. An exchange of views may result in action forestalling the development of conditions likely to cause a default. Confidence and mutual understanding between a lender and a borrower always form the strongest bulwarks against adverse changes which are almost certain to arise during the life of any long-term commitment.

III Basic Assumptions and Principles Involved in Project Development

To-day I would like to take up some of the basic assumptions and Principles involved in planning for development of project where natural resources are involved.

The ultimate purpose of economic analysis of a project is to ascertain the effectiveness of economic resources such as land, labour and materials when developed in a project, we compare this effectiveness in an economy with the non-development of the project. In other words what is the effect on the economy with and without the project.

The ultimate aim of developing any project is to satisfy human needs and desires.

The viewpoint from which the effects of a project should be formulated and evaluated should not be a limited point of view as what constitutes benefits and costs from an individual point of view but rather a public point of view should be observed. That is, a viewpoint which should include consideration of all effects, beneficial or adverse, short-range or long range, that can be effected to be felt by all persons and groups in the entire zone of influence of the project. A project should do the most good to the most people over the longest period of time.

In general, the value of projects to the public are measured in terms of a monetary unit. Despite the limitations of reflecting values from a public

viewpoint in terms of a monetary units, it is concluded that there is no other suitable measure for evaluating the effects of projects in common terms. This type of analysis is usually referred to as a "benefit-cost" analysis. However, benefit-cost analysis are not always the sole basis for approving or disapproving resource development projects. For example, where the need for a project arises from considerations of public policy other than economic factors, such as foreign policy or national defence, these considerations may govern.

Even in such cases, since economic resources are limited in relations to need, benefit cost analysis serve a valuable purpose in revealing the relative economic efficiency of such projects.

While this course is concerned largely with the analysis of the "economic or financial feasibility" of a project, a few words need to be said at this point on the overall effects of projects on the economy.

The economic effects which may be expected if a project is developed cover a wide range. The range of effects can be illustrated simply by considering just one chain of events that might stem from a typical irrigation project which makes available a supply of water for agriculture. The farmer uses the water in conjunction with land, labour and materials to produce wheat. The wheat, in turn, is transported to and processed through a silo and a mill to produce flour which is utilized by a baker to make bread for sale to a consumer. The problem is to determine which of the economic effects along that and similar chains of events are attributable, wholly or in part, to the project. To facilitate subsequent discussion of these problems, terminology for certain classes of effects will be given and the terms illustrated by application to a hypothetical irrigation project as illustrated.

Project costs are the value of the goods and services (land, labour and materials) used for the establishment, maintenance, and operation of the project including allowance for interest and risks. In the irrigation project cited earlier, the project costs would be all the costs of making irrigation water available to the farmer.

Associated costs are the value of the goods and services needed, over and above those included in the cost of the project itself, to make the immediate products or services of the project available for use or sale. In the cited example, the farmer's costs of producing the wheat (other than any charge for the irrigation water) would be associated costs.

Primary benefits are the value of the immediate products or services resulting from the measures for which project costs and associated costs were incurred. In the irrigation project illustration, the primary benefits are the value of the wheat produced by the farmer.

Secondary costs are the value of any goods and services (other than those covered by project and associated costs) which are used as a result of the project. These include the costs of further processing of the immediate products or services of the project and any other costs, over and above project and associated costs, stemming from or induced by the project. In the irrigation project example, the costs of transporting the wheat, silo and milling costs, bakery costs and the cost of distribution to consumer would be secondary costs.

Secondary benefits are the values added over and above the value of the immediate products or services of the project as a result of activities stemming from or induced by the project. In the cited example, the value of the bread over and above the value of its wheat content would be a secondary benefit. How much of this secondary benefit creditable to the project will be discussed later in this course.

In our analysis of the Thal Project I will attempt to point out with your help these various types of costs and benefits.

IV Summary of Procedures for Project Formulation and Analysis of Justification

In to-day's lecture we will be concerned largely with a summary of what we have discussed in this class on procedures for project formulation, analysis and justification.

The several steps in an economic analysis to permit a determination of the relative efficiency with which economic resources will be used if a project is undertaken can be summarized as follows:

1. *Establishment of need*—In general, the existence of a need or demand for project services is established in the process of determining the effect on the economy with and without the project.
2. *Estimate of project benefits and costs*—In general, the benefit-cost analysis involves the measurement of certain physical and economic factors under conditions expected to prevail without the project and under conditions expected to prevail if the project is built.
3. *Establishment of scope of project development*—The scope or scale of development of a project should be established at that point where the net benefits from use of resources for project purposes are at a maximum.

Net benefits are at the maximum when the scale of development is established at the point where the benefits added by the last increment of extension of scope are equal to the cost necessary to add that increment of scope to the project.

At the point of maximized net benefits, the total project benefits will necessarily exceed the total project costs by the maximum.

4. *Ascertaining most economical means of realizing project purposes*—The project or any separate segment thereof selected to accomplish a given purpose should be more economical than any other potential means, public or private, available for accomplishing the project.

APPRAISING COSTS AND BENEFITS OF DEVELOPMENT PROJECTS

- 5 *Comparison of relative economic value of justified projects*—The relative economic value of one project over another under various economic conditions may be determined by several methods—
- (a) By comparison of the respective amounts of excess benefits over costs. This method good if costs were no object.
 - (b) By comparison of rates of return on respective investments. This method has limited usefulness.
 - (c) By comparing the ratio of benefits to costs. This method reflects both benefit and cost values and is the recommended basis for comparison of projects.

This completes our work on the first phase of the course, namely, the basic assumptions and principles involved in setting up or the planning for the development of resource development projects. At the next meeting of the class, we will take up the problem of measurement of Benefits and Costs.

V Measurement of Benefits and Costs

The use of benefits and costs in connection with the formulation and justification of projects requires their measurement in common terms. In placing benefits and costs on a sound and comparable basis, questions involving standards, problems, and procedures of measurement must be recognized and properly resolved. These measurement standards relate to price levels, interest rates, risk allowances, and period of analysis including consideration of amortization of investment and salvage values. Particular problems of measurement include the treatment of tangibles and intangibles, adjustments for levels of economic activity costs of affected public facilities, acquisition of land and improvements, taxes, displaced facilities, extension of useful life, and consequential damages.

The benefits and costs of projects occur diverse physical forms at different times, and have effect over varying periods of time. It is necessary to bring these effects to a common basis of measurement to permit sound comparison of benefits with costs in a particular project, and to permit comparison of various projects. The most convenient and widely recognized basis for doing this is *the monetary unit*.

The use of the monetary unit for translating project benefits and costs to a basis permitting their comparison between projects entails selection of various standards. These standards necessarily include the prices by which the physical effects of a project are translated into monetary values, the interest and discount rates by which these effects are translated to a common time and risk basis, and the selection of a period of analysis for a project.

PRICE LEVELS

Ideally, measurement standards in project evaluation should reflect the interests of society as a whole, as such, these standards should be concerned with "real" costs and benefits. However, it is not practicable to

APPRAISING COSTS AND BENEFITS OF DEVELOPMENT PROJECTS

establish and apply "real" costs and values. Estimates would be in the real terms rather than in terms of a monetary unit.

All things considered, the most satisfactory approach would result from using prices estimated as they are expected to be at the time when costs are incurred and benefits received. As a practical matter this would mean applying prices current at the time of investigation to project investment costs. Benefits and other costs would be expressed in terms of a price level expected to prevail at the time when these benefits and costs would be expected to occur. This procedure is recommended as the best available method. It permits a useful working relationship with repayment determination. It takes account of future prices and price relationships based on the best judgment at hand.

For the purpose of evaluating benefits and costs on the basis of prices expected to prevail when benefits and costs occur, the effects of projects fall into three general classes:

- (1) Investment costs, which are usually incurred at the outset of the project.
- (2) Operation, maintenance and replacement costs, which occur at various times throughout the life of the project.
- (3) Benefits, which can be assumed to accrue throughout the life of the project at uniform or varying rates.

Initial investment costs should usually be evaluated on the basis of prices prevailing at the time the project begins.

Future operation, maintenance, and replacement costs and benefits should be evaluated at the time of occurrence of such costs and benefits. The most practicable procedure is to estimate the *average* price level expected over the life of the project. This requires consideration of population growth, technological developments, changes in consumption patterns, level of employment, amount of foreign trade, possibilities of substitutes and alternative sources of supply and monetary and fiscal policy. The difficulties involved in forecasting possible future developments and estimating probable future price levels are tremendous but the problem cannot be avoided by merely accepting current or historical prices as a basis for future expectations.

The soundness of project formulation and justification analysis depends in part on the accuracy of benefit and cost estimates. In general, it is preferable that estimates be on the conservative side and have a reasonably high degree of certainty of realization. Future price levels as estimates for evaluating benefits and costs should, therefore, be the expected average price levels which may reasonably be expected to prevail during the life of the project. In this respect, price level forecasts for benefit-cost analysis should be on a conservative basis.

In summary one can say that to satisfy the various purposes to be served by benefit-cost analysis the use of prices reasonably expected to prevail at the time of benefit and cost accrual is recommended. For installation costs, prices expected during the construction period should be used. In calculating most types of benefits and in calculating costs for operation, maintenance, and minor replacements, the prices used should be the average prices estimated to prevail over the life of the project.

APPRAISING COSTS AND BENEFITS OF DEVELOPMENT PROJECTS

At our last meeting under the subject of measurement of benefits and costs we discussed the question of prices levels. To-day we are going to discuss how to handle risk allowances and interest.

As I told you yesterday, the values attached to benefits and costs at their time of accrual can be made comparable only after conversion to a common basis of time and degree of certainty of occurrence. Interest and risk allowances provide a means for giving monetary expression to differences and time and certainty of occurrence of benefits and costs.

Prevailing interest and discount rates for loans and investments usually reflect both the "time" and "risk" elements, the wide range in such rates arises largely out of differences in the estimated risk on various types of loans or investments. To the extent feasible, direct or specific allowances should be made when planning a project.

Allowances for risk take account of the hazards and uncertainties that intervene between the commitment or investment of resources and the accrual of benefits. There are two principal types or categories of risk for which allowances must be made in benefit-cost analysis. One type is predictable, since in many countries basis on past history of experience are available to calculate the probability or frequency of losses associated with its occurrence. For predictable risks, the value of such risks may be converted into a reasonably certain annual amount in terms of a monetary unit, and can be protected through insurance or an appropriate allowances. To the extent feasible, the value of all predictable risks should be converted to an annual or present worth basis and allowed for either as an addition to project costs or as a deduction from project benefits. For example, where losses from fires, storms, pests, and diseases could be estimated with reasonable assurance, or the costs of their prevention if such is possible, the returns available to justify investment costs should be reduced accordingly.

Risks in the form of *uncertainties* for which no appropriate basis is available for prediction include the probability of errors in estimating benefits and costs due to such factors as fluctuations in the levels of economic activity, technological changes, and other unforeseeable developments adversely affecting the cost or value of proper services. Risk allowances for this group of uncertainties must be based largely upon judgment, since precise basis are not available for calculating their value.

It is recommended that net returns exclude all predictable risks, either by deducting them from benefits or adding them to project costs, usually on a present worth or annual equivalent basis.

Since projects are financed by some Government or private agency, charge is usually made for the use of the money over a period of time. Interest rates are a measure of the value attached to time differences and, hence, provide a means for converting estimates to a common time period. In calculating the costs of developing a project interest should be charged on the project for its entire economic life and reduced to an annual basis in order to compose annual costs and benefits.

The rate of interest to charge a project depends upon the rate you must pay for financing the project. Generally government financed projects can be financed at a lower rate than private industry. The govern-

ment rate of borrowing is relatively risk free because the security is general taxing power and because the overall degree of security for the loan is relatively certain. In view of these considerations, it is recommended that the expected average long-term government bond rate be used as the basis for calculating public investment costs and that higher rates be used for private investment costs.

In conclusion, when laying out a project do not fail to include in the costs or deduct from the benefits and allowances for risks and a interest charge for the use of the money. Both charges should be reduced to an annual basis for the purpose of computing the costs and benefits on an annual basis.

Under the subject of measurements of benefits and costs we have discussed two principal subjects, namely, price levels and risk allowances and interest rates. To-day we are going to discuss the question of period of analysis of a project.

Every project has a limited economic life. A number of economic and physical forces limit the economic life of any project. Physical depreciation, obsolescence, changing requirements for project services, and time discounts and allowances for risk and uncertainty may limit the present value of future project services. The economic life of a project is determined by the point in time at which the effect of the foregoing factors is to cause the costs of continuing the project to exceed the additional benefits to be expected from continuation. As used in this sense, the economic life is generally less than the physical life of a project, and never more than the estimated physical life.

While economic life establishes the upper limit on the period of analysis, it is often convenient and desirable to use a period short of the economic life of the project for purposes of economic analysis. The use of a period less than the ultimate expected economic life provides an additional factor for allowing for risks. Conservative estimates of salvage values, minimum estimates for the productive life of initial instalments and replacements, and operation and maintenance allowances sufficient to provide full operating condition throughout the period of analysis all tend to serve as means for reducing other allowances for risk and uncertainty.

The difficulties and the uncertainty associated with estimating the value of remote effects provide another justification for limiting the period of analysis. Even though the character of the basic structures may allow for an extended economic life, or the possibilities of replacement may be such as to suggest a continuing life, the limitations on the reliability of estimates projected into the distant future and their small present value when discounted provide reasons for selecting a maximum evaluation period.

Generally a period of analysis of 100 years is considered as the upper limit on the economic life of any project. Justification for this limit lies in the more than usual uncertainty involved in predicting the remote future and in the likelihood that any benefits and costs accruing beyond a 100 years would be largely offsetting in their amounts.

Any resources remaining at the end of the period of analysis should be valued in terms of their non-project value. For example, in the case of land, the salvage value should be based on its potential use at the termination of the project, but this value should not exceed the initial cost of the landless any damages resulting from the project. For most other remaining resources, the salvage value would be either junk values or values of such goods for use in other locations, after allowance for transportation or reinstallation.

Establishing the maximum length of project life and the basis for salvage determines the period and the amount of the *net capital* investment to be amortized. The amortization charge should be sufficient to cover all capital investment costs in excess of salvage during the period of analysis. Either of the two common methods for treating salvage give approximately the same results. One is the deduction of the present worth of salvage from the present investment cost, with the remainder amortized over the period of analysis. The other is to charge interest on the total investment but to amortize only the investment cost in excess of the value of salvage remaining at the end of the period.

In conclusion one can say that the maximum period of analysis should be the economic life of the project or 100 years, whichever is the shorter. Even for projects involving basic structures of extended life, and, those having continuing replacement possibilities, it is recommended that a 100-year period of analysis be used as the upper limit on economic life, with allowances for salvage at the end based on non-project uses. The amortization charge should be sufficient to cover the capital investment during the period of analysis, calculated on a sinking fund basis using the investment cost interest rates. Except in special cases, the basis for estimating benefits and costs should be under the assumption of maintaining the project at full operating capacity.

VI Problems of Measurement

In determining benefits and costs on particular projects there are many special problems that will need to be measured as costs and benefits.

The first point of discussion will be on the treatment of tangible and intangible effects. You will recall that I told you earlier in this course that the tangible benefits or effects of a project are those effects that are measured in monetary terms. Intangible effects are those which cannot be measured in monetary terms.

An example of intangible effects would be the loss of a scenic or historic site in connection with a proposed dam project.

The fact that intangible effects cannot be evaluated in monetary terms does not permit you to overlook or minimize them.

Quite often, intangible benefits may include such effects as the strengthening of national security and the national economy, the substitution of power from water resources for power produced from a limited and non-replaceable fuel resources, the provision of new avenues for enjoyment through wildlife and many others.

APPRAISING COSTS AND BENEFITS OF DEVELOPMENT PROJECTS

The saving of human life through flood control is an example of the kind of an intangible effect that is difficult to evaluate. However, a human life might be given, as a minimum, the same economic value as would be payable for a life lost during project construction under compensation arrangements which are normally included in estimates of project costs.

Another factor to be considered is the adjustment of project costs and benefits for levels of economic activity

Usually the adjustment of project costs to take account of variations in the level of economic activity should not be made at the time of project formulation and long-range project analysis. During times of relatively low economic activity and high unemployment, economic resources other than labour are not wasted, or lost. Adjustments of market price, evaluation of project costs will, therefore, usually be necessary only for direct labour employed on the project.

Except in unusual instances projects should be formulated and analysed under the assumption of a relatively high level of employment. Adjustments for under-employment of labour and other economic resources should be considered only if construction is expected to be undertaken during the period of relatively low economic activity

The acquisition of land and improvements require special consideration. Most land and improvements acquired in connection with project development will have their use changed as a result of the project. Some lands are flooded for reservoirs, others are shifted to less intensive uses but remain in agriculture. The problem is to assure that the productivity of the land with and without the project is properly reflected either in project costs or benefits

When land and improvements are acquired for project purposes, the acquisition costs, including legal fees and administrative expenses, are normally included as project costs

Productivity of the land in pre-project uses is normally expected to be sufficient to justify the purchase price. If purchase costs exceed the productive value of the property, the excess cost must be justified by the benefits of acquisition.

Another factor requiring special consideration is displaced facilities. Displaced facilities are facilities whose present use is abandoned because project facilities provide essentially the same services. In evaluating the services attributable to the project being analyzed, allowances must be made for the services that would have been provided by the displaced facilities. The effects attributable to the project are measured by the value of the difference in physical effects with and without the project, after allowance for any costs of the displaced facilities made unnecessary by their abandonment

The extension of the useful life of a non-project structure or facility by another project needs special attention. The benefit creditable to a project for such extension of life is the difference in the net value of goods or services provided by the affected facility with and without the life

extending measures. Such benefits may be measured in terms of the value of the increased goods or services provided or in terms of the reduced costs of providing such goods or services.

For example, the benefit of the extension of the useful life of a reservoir by preventing siltation equals the difference in reservoir benefits expected with and without the silt-prevention measures, but the cost of the silt-prevention measures should not exceed the cost of removing the silt from the reservoir or providing equivalent alternative reservoir capacity.

Consequential damages are uncompensated losses resulting directly from the development of a project. Even though no compensation may be required or possible such losses are nonetheless a real part of the project development costs. For example, when lands are flooded to develop a reservoir, there are costs for relocation and re-establishment of the persons and enterprises which are displaced, and local enterprises which do business with people in the project area may have their volume of business and net incomes reduced if people move from the area.

Where individuals are expected to make shifts in order to avoid or minimize these losses, the measurable consequential damages should be included as project costs but only for the necessary readjustment period. On the other hand, projects requiring the taking of sub-marginal land for project purposes may provide offsetting public benefits by increasing local net incomes or by causing migration to areas of greater productivity. Such considerations are important from a public point of view, and their incidence may have an important bearing on repayment.

VII Review of Course of Study

To day we are going to review what we have been studying in this class. To assist you in your review, I have prepared an outline which I will read and the points will be discussed in detail as we proceed. In your planning work, such an outline should prove invaluable as a guide.

PURPOSE OF THIS PART OF COURSE

- (1) The purpose of this part of the course is to illustrate how the *principles, standards, and special problem solutions of benefit-cost measurement* can be applied in the *formulation, evaluation and selection* of projects.

ANALYSIS OF NEEDS AND OBJECTIVES

- (2) The first step in a project analysis should be to analyse the existing and potential needs or demands which can be served by the project.
- (3) Above involves an estimate of what *use, if any*, will be made of the potential *products or services* and at the prices or values expected to be applicable to such products or services.

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- (4) Objectives of the project should be selected as a basis for further planning

ANALYSIS OF PHYSICAL POSSIBILITIES FOR MEETING OBJECTIVES

- (1) Next step in project development is to examine and analyse the physical possibilities for improvement or development
- (2) At all stages of such analysis, *preliminary, intermediate and final*, the advantages and disadvantages of the various physical possibilities can and should be evaluated and compared in terms of benefits and costs.

MEASUREMENT OF PHYSICAL EFFECTS OF A PROJECT

- (1) As a starting point of analysis of the possibilities of a project to meet any given objective, it is usually necessary to analyse a specific initial proposal. This nucleus of development may be selected on the basis of judgment through consideration of data available and which appears to offer possibilities to meet objectives

GENERAL PROCEDURE FOR MEASUREMENT OF BENEFITS AND COSTS

- (1) Translation of the physical effects of a project into *benefits and costs* involves estimates of the values of the increases and decreases in the goods and services under future conditions *with and without* the project
- (2) For the purpose of economic analysis, the benefits and costs should be measured from the same *viewpoint*, to a *comparable degree* and on comparable basis for time of occurrence and other factors
- (3) Starting with an estimate of the expected physical effects of a project, such as the production of so many bushels of wheat by irrigation, it is necessary to evaluate those effects in monetary terms. Market price basis is considered the best available approach for such evaluation
- (4) The economic life of the project must be estimated and prices expected to be applicable during that time must be forecast.
- (5) By applying measurement principles and standards previously discussed, i.e., interest or discount, risk, and other factors, the benefits and costs of a project can be evaluated in monetary terms and reduced to a common time basis for comparison.
- (6) It should prove most convenient to express benefits and costs in terms of their equivalent average annual value over the selected period of analysis.

MEASUREMENT OF BENEFITS.

- (1) Tangible benefits are classified into two categories, Primary and Secondary

- (a) *Primary indent benefits*, which are the values of immediate products or services of a project, are readily measureable in most cases.

The amount of "primary benefits" attributable to the project is the value of primary benefits less all associated costs necessary for their realisation.

- (b) *Secondary benefits*, which are values added over and above the value of the immediate products or services of a project, such as those resulting from subsequent processing, are most difficult to measure, and in some cases may be appreciable, but relatively small compared to primary benefits
 - (c) *Project benefits* are determined by summing up the primary and secondary tangible benefits attributable to the project.

MEASUREMENT OF COSTS

- (1) There are two basic classes of tangible costs to be measured.
 - (a) *Project costs*, which are to be compared with project benefits, and
 - (b) *Non-project costs*, which are the associated and secondary costs which must be deducted from overall benefits to obtain project benefits.
- (2) Project Costs are the value of the goods and services used for establishing, maintaining and operating the project. These costs include
 - (a) Initial investment in land.
 - (b) Labour and materials
 - (c) Cost for replacement, maintenance, and operation.
 - (d) Costs of investigations, interest during construction, engineering, inspection, administration, and overhead in general should be included
 - (e) Also included are costs *induced* by the project, whether or not *actually* paid for by the constructing agency, *example*. consequential damages.
- (3) *Associated and secondary costs* are measured on the basis of the same principles and standards applicable to other project effects.

ESTABLISHING SCALE OF DEVELOPMENT.

- (1) After the initial proposal or nucleus of the development has been selected for analysis and its benefits and costs measured, consider-

APPRAISING COSTS AND BENEFITS OF DEVELOPMENT PROJECTS

tion can be given to scales of development greater or less than the selected nucleus

This applies to—

- (a) Variations in the scope of a single project.
- (b) Additions or omissions of projects from a program.
- (c) Inclusion or exclusion of a specific purpose from a project or program

ANALYSIS OF JUSTIFICATION.

In summary, project is properly formulated and economical justified, if

- (a) The project benefits exceed project costs
- (b) Each separable segment or purpose provides benefits at least equal to its cost
- (c) The scale of development is such as to provide the maximum net benefits; and
- (d) There is no more economical means of accomplishing the same purpose which would be precluded from development if the project was undertaken.

COMPARISON OF PROJECTS.

The relative economic desirability (exclusive of consideration of intangibles) of a number of projects which have been properly formulated is reflected in their respective ratios of benefits to costs

VIII Application of Principles to Various Project Purposes

In today's lecture I am going to try and illustrate the application of the principles and practices discussed in this class to the measurement of benefits and costs to special projects. The first project will be irrigation, a subject you all know a great deal about in Pakistan.

IRRIGATION

As you know irrigation projects provided a regulated water supply for agricultural lands in those areas where natural rainfall is sufficient. Such projects make possible additional production of needed food, feed and fibre through more intensive use of land and the application of additional labour and capital. An increase in the production of crops, livestock and

APPRAISING COSTS AND BENEFITS OF DEVELOPMENT PROJECTS

livestock products at the farm level provides economic returns to the overall economy than such activities as marketing, processing and transportation

Primary irrigation benefits include the value of any increase in the form produced and sold off the farm and consumed by the farm, or farm family. The increases in production are measured by comparing the volume of usable agricultural production from the area with and without the project. The difference, in terms of average annual production, is converted to monetary values by application of expected market prices.

This increase in production results from the project and from the application of associated resources. The cost for associated resources for irrigation are the additional costs of private farm investments and farm operation necessary to utilize the irrigated water. With irrigation increased investments required by the farm are land preparation for irrigation, water distribution structures, additional livestock, more buildings and machinery, and Local Governments' charges will increase for their services. These associated costs may be measured on a monetary basis in terms of increased costs for production, interest on the investment, maintenance, depreciation of equipment, property taxes, and family living expenses. The primary benefits attributable to the project from increased production are the value of the increased production less the associated costs.

Secondary irrigation benefits are the values added by transporting, processing and distributing the added farm products from the project plus any value added by other activities stemming from or induced by the project. This is the benefit added to the overall economy of a country stemming from the project. Such benefits should be measured by the difference in net incomes in secondary activities under expected conditions with and without the project. Secondary costs incurred in handling an increased supply of goods may thus be deducted to obtain net secondary irrigation benefits attributable to the project.

Secondary benefits are usually omitted from project formulation and are used only in a final project analysis.

There are no special problems in the measurement of costs of irrigation which were not covered by the principles and procedures previously outlined in this course.

FLOOD CONTROL

In flood control projects benefits are provided in two general ways, (1) by preventing the loss of goods and services, and (2), by making possible increased production of goods and services through more intensive use of land.

In general, the need for flood control depends on the need for the use of the property, products or services which would be destroyed or damaged or which are prevented from being produced or used as a result of floods. The benefits of flood control is the net income made possible by flood control measures.

APPRAISING COSTS AND BENEFITS OF DEVELOPMENT PROJECTS

The *primary benefit* obtainable through prevention of flood damage should be measured as the difference between the damage that is expected to occur throughout the life of the project if flood control is provided and the damage to be expected without flood control. The flood damage should, in general, be evaluated as the cost of replacing, repairing or rehabilitating the affected property.

In addition to the prevention of physical damage to property, there may be primary benefits through avoidance of costs made necessary by floods such as, (1) cost of evacuation and reoccupation of flooded areas, (2) cost of emergency flood protection and flood fighting, (3) cost of relief, care and rehabilitation of flood victims, (4) the direct loss through destruction of business, and (5) the increase in direct loss of doing of business during floods. All such benefits should be measured in terms of the estimated costs or losses that would be avoided with and without the flood control project.

In estimating primary benefits resulting from prevention of losses in agriculture, consideration must be given to the value of crop losses prevented, to increase costs of production such as replanting and to physical damages other than crop losses. The net effect of all such factors may be summed up in terms of the change in net income to farmers with and without flood control.

Secondary benefits from flood control may arise in secondary activities such as those which stem from use or processing of the products of agriculture which are directly affected by the floods. Such benefits should be measured in terms of with and without the project.

The primary benefits resulting from a more intensive use of property made possible by flood control should be measured as the difference in the productive capacity of the land with and without the flood control project. The procedure is the same to the ones previously discussed in this class.

Secondary benefits may be measured as indicated previously for secondary benefits from irrigation projects.

WATERSHED PROJECTS

Watershed projects consist primarily of measures to improve ground cover and condition including better cultural practices, shifts in rotations of crops and intensity of land use, strip cropping, contour farming, fire protection and controlled grazing, stream protective measures and any other measures for the control of natural resources.

The principal benefits resulting from watershed programme measures include, (1) reductions in floodwater damage and a greater or more intensive use of land, (2) reductions in the rate of physical destruction of land and facilities from such causes as erosion, swamping, sedimentation or deposition of infertile overwash of soils, and (3) increases in land productivity over that expected in the absence of the programme through preventing reduction in fertility or increasing productive capacity.

APPRAISING COSTS AND BENEFITS OF DEVELOPMENT PROJECTS

To the extent possible, the benefits and costs of the various segments of the overall programme should be considered separately for proper project formulation.

The measurement of the multiple effects arising from specific treatment practices involves the problem of determining what share of the costs were incurred to obtain a particular benefit. For example, while the use of lime and fertilizers may be essential to plant growth of vegetation necessary to prevent erosion, hold water, and slow down run-off they may also increase agricultural production. Thus a part of their costs may be chargeable in part to each of these purposes.

The benefits to the land from preventing land damage to the lands upon which measures are applied may have the effect of increasing productivity or preventing the loss of soil fertility, or may reduce production costs. Such benefits usually are measured by the differences in net income with and without the project over the period of analysis. Estimates of expected future production with and without programme are required, such estimates being converted into monetary terms by applying prices expected to prevail at the time of accrual and reduced to a common time basis. Comparable estimates for the project with and without the project are required to calculate costs.

IX Review of Course in Costs and Benefits

We have come to a point in our lectures where I feel it would be advisable to stop and review what we have gone over in the class work. I have prepared for you an outline of how the principles, standards, and special problem solutions of benefit cost measurements can be applied in the formulation, evaluation and selection of projects. This outline should be kept for future reference which will be helpful to you in planning projects in your own countries.

ANALYSIS OF NEEDS AND OBJECTIVES

1. The first step in a project analysis should be to analyse the existing and potential needs or demands which can be served by the project.
2. Above involves an estimate of what *use*, if any, will be made of the potential *products* or *services* and at the prices or values expected to be applicable to such products or services.
3. Objectives of the project should be selected as a basis for further planning.

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1. Next step in project development is to examine and analyse the physical possibilities for improvement or development.

APPRAISING COSTS AND BENEFITS OF DEVELOPMENT PROJECTS

2. At all stages of such analysis, *preliminary, intermediate and final*, the advantages and disadvantages of the various physical possibilities can and should be evaluated and compared in terms of benefits and costs

MEASUREMENTS OF PHYSICAL EFFECTS OF A PROJECT

As a starting point of analysis of the possibilities of a project to meet any given objective, it is usually necessary to analyse a specific initial proposal. This nucleus of development may be selected on the basis of judgment through consideration of data available and which appears to offer possibilities to meet objectives.

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4. The economic life of the project must be estimated and prices expected to be applicable during that time must be forecast.
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The amount of "primary benefits" attributable to the project is the value of primary benefits less all associated costs necessary for their realisation

Secondary benefits, which are values added over and above the value of the immediate products or services of a project, such as those resulting from subsequent processing, are most difficult to measure, and in some cases may be appreciable, but relatively small compared to primary benefits

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- (1) There are two basic classes of tangible costs to be measured.
 - (a) *Project costs*, which are to be compared with project benefits, and
 - (b) *Non-project costs*, which are the associated and secondary costs which must be deducted from overall benefits to obtain project benefits
- (2) Project costs are the value of the goods and services used for establishing, maintaining and operating the project. These costs include
 - (a) Initial investment in land
 - (b) Labour and materials.
 - (c) Cost for replacement, maintenance and operation
 - (d) Costs of investigations, interest during construction, engineering, inspection, administration and overhead in general should be included
 - (e) Also included are costs *induced* by the project, whether or not actually paid for by the constructing agency, *example* consequential damages
- (3) *Associated and secondary costs* are measured on the basis of the same principles and standards applicable to other project effects.

ESTABLISHING SCALE OF DEVELOPMENT

After the initial proposal or nucleus of the development has been selected for analysis and its benefits and costs measured, consideration can be given to scales of development greater or less than the selected nucleus

APPRAISING COSTS AND BENEFITS OF DEVELOPMENT PROJECTS

This applies to—

- (a) Variations in the scope of a single project
- (b) Additions or omissions of projects from a programme
- (c) Inclusion or exclusion of a specific purpose from a project or programme

ANALYSIS OF JUSTIFICATION

In summary, project is properly formulated and economically justified, if—

- (i) the project benefits exceed project costs,
- (ii) each separable segment or purpose provides benefits at least equal to its cost;
- (iii) the scale of development is such as to provide the maximum net benefits, and
- (iv) there is no more economical means of accomplishing the same purpose which would be precluded from development if the project was undertaken

COMPARISON OF PROJECTS

The relative economic desirability (exclusive of consideration of intangibles) of a number of projects which have been properly formulated is reflected in their respective ratios of benefits to costs.

X Analysis of the Thal Project

FINANCIAL ANALYSIS

METHOD OF ANALYSIS

As pointed out earlier, the Thal Project consists of four parts, namely, (1) Irrigation, (2) Roads, (3) Forestry, and (4) Colonization. Due to the lack of complete information, only one phase of the project colonization can be analysed

In the farm analysis, the gross annual income from production is compared with the annual expenses and the "Farm Return—Farm Cost ratio" was calculated

Prices used for the calculation of costs are the prices incurred when the project was first begun. Prices used for the calculation of benefits reflect the average current level. This level or higher is presumed to prevail over the next 20 years period covered in the cost analysis. Generally as trend of using prices might be anticipated for the area which will have a tendency to improve the benefit cost ratio over that determined.

APPRAISING COSTS AND BENEFITS OF DEVELOPMENT PROJECTS

Family labour was charged to the farm at the going rate for outside hired labour.

Total average capital investments were charged interest at the rate of 1 per cent per annum. Depreciation was charged on the buildings at the annual rate of 2 per cent, on bullocks 10 per cent and on implements 20 per cent.

Farm Return to Farm Cost Ratio—The farm return—farm cost ratio is the quotient of the respective annual values of farm returns to farm costs, and is an indication of the relative ability of the project land settlers to repay their loans. The formula for determining this ratio was as follows ---

$$\frac{\text{Total Farm Returns}}{\text{Total Farm Costs}} \quad . \quad \text{The ratio then}$$

becomes
$$\frac{\text{Rs. 1,400}}{\text{Rs. 770}} = 1.83 : 1$$

REPAYMENT ABILITY

The farm return—farm cost ratio of 1.83 : 1 above, is one indication of the repayment ability of the farmer and indicates that for every rupee of cost, the farmer will have a return of 1.83 rupees, or the return of cost plus 83 per cent. However, although the farm return—farm cost ratio indicates a return of 83 per cent above cost, it does not indicate the real ability of the farmer to repay his loan, allowances must be made for family maintenance. This was estimated to require Rs. 440 per annum.

Calculating the repayment ability of the farmer with allowances for family maintenance would require the following formula:—

$$\frac{\text{Total Farm Return and Family Labour}}{\text{Total Farm costs and Family allowances}} \quad . \quad \text{The ratio then}$$

becomes
$$\frac{\text{Rs. 1,580}}{\text{Rs. 1,210}} = 1.31 : 1$$

A ratio of 1.31 : 1 indicates the farmer still has ability to pay for his loan after all farm costs plus allowances for family maintenance.

REPAYMENT SCHEDULE

Although many schemes are available to amortize or pay off farm loans the following is but an illustration of how the settlers in the Thal Area could repay their loans.

You will note in the schedule of payments that the implements are paid for in the first year, the bullocks at the end of the third year, the buildings by the end of the 7th year, and the complete loan at the end of the 16th year.

You will also notice that the largest payment on principle and interest is Rs. 190 occurring in the first half of the fourth year. Each payment on

APPRAISING COSTS AND BENEFITS OF DEVELOPMENT PROJECTS

principle and interest is reduced each six months and the final payment amounts to Rs 127-8-0.

This repayment schedule is not to be taken as the schedule proposed for the Thal area. It merely serves to illustrate one method that can be used. There are many other methods. The job of you students as planners is to make out the best plan for a particular project. There is no one best plan for all projects but there is a best plan for each project.

JUSTIFICATION OF THE PROJECT

It is anticipated that the total cost of the overall project, including irrigation, roads, forestry and colonization will approximate Rs. 30 crores, and it is thought that over a period of years it will become a paying proposition and give a 4½% return on the capital cost. From the government point of view therefore the project is justified, for not only will it assist in the settlement of large numbers of refugees, but it will also be financially sound as well. In addition to this aspect, however, is the effect that the scheme will have on the economy of the Punjab as a whole. As already indicated something like 1,500,000 acres will be grown with foodgrains and other crops. It is estimated that approximately 1,000,000 will be grown with foodgrains—chiefly wheat, which on the basis of an annual production of 400,000 tons will be worth approximately Rs. 10 crores at Rs 250 per ton—the present price. In addition it is expected that 250,000 acres will be grown with cotton which, at 10 maunds of seed cotton per acre, will give approximately 135,000 bales of cotton and 1,300,000 maunds of cotton seed, worth slightly more than Rs. 5 crores together. Finally the balance of 50,000 acres will probably be planted with sugarcane, which at 150 maunds of cane per acre and at a price of Re. 1 per maund will be worth approximately Rs 7½ lakhs.

In addition to the financial aspect of the project referred to above is the fact that after allowance is made for the requirements of the cultivator the exportable surplus of foodgrains of the Punjab will be increased by approximately 300,000 tons, and that the cotton production will be increased by approximately 12%. The sugarcane will of course be consumed locally and thereby reduce imports of sugar. The economic effect of the project on the economy of the Punjab is therefore regarded by the Government as favourable.

COSTS AND RETURNS FROM A 15 ACRE FARM ON SANDY LOAM SOIL

(a) Capital Investment—

			Rs.	Rs.
A.	15 acres land at Rs. 150	..	..	2,250
B.	House and cattle shed	..	..	1,000
C.	Implements	..	..	100
D.	Bullocks (2)	..	..	400
Total Capital Investment				3,750

APPRAISING COSTS AND BENEFITS OF DEVELOPMENT PROJECTS

(b) Annual costs—

A. Cash, costs—

	Rs.	Rs.
1. Interest on average capital at 4% ..	90	
2. Seed ..	100	
3. Feed (concentrates, gram) ..	100	
4. Water + Land revenue + Re. 1-2-0 (land revenue) ..	95	
5. Tapes (owners right) at Re 2-8-0 ..	30	
6. Repairs (implements) ..	25	
7. Bullock (shoeing, veterinary, etc.) ..	24	
8. Miscellaneous at 10% of cash costs ..	46	
Total Cash, costs ..	510	510

B. Non-Cash costs—

9. Depreciation—

(a) Bullocks at 10 years ..	40
(b) Repairs, buildings, at 2% of cost ..	20
(c) Implements, at 5 years ..	20

10. Family labour, 120 days, at Rs 1-8-0 ..	180
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Total Non-Cash costs ..	260	260
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C. Total Annual Costs	770
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(c) Gross Annual Income—

A. Crops—

Rabi Crops—

11. Wheat—6A at 10 mds. = 60mds × Rs 8	480	
12. Gram (used as feed) farm value ..	72	
13. Oilseeds—1A at 8 mds. = 8 mds. × Rs. 16	128	
14. Fodders—1A (used on farm) ..	..
Total Rabi Crops ..	680	680

Kharif crops—

15. Fodders—1½ A (used on farm) ..	..
16. Ground nuts—1A at 5 mds × Rs. 16 ..	80	
17. Cotton—2A at 6 mds. = 12 mds. at Rs. 25	300	
18. Sugarcane—¾ A at 45 mds. gur = 34 mds × Rs 10 ..	340	
Total Kharif crops ..	720	720

B. Total Crop Income	1,400
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APPRAISING COSTS AND BENEFITS OF DEVELOPMENT PROJECTS

			Rs.	Pai
(d) Net Farm Income—				
19	Total crop income	..	..	1,464
20	Total Annual Costs	.	.	774
	Net Farm Income	.	.	630
(e) Family Income—				
21	Farm privileges—			
	(a) Fruits and vegetables	.	120	
	(b) House (value of shelter)	..	60	
22.	Value of family labour	..	180	
23.	Net farm income	.	630	
	Total Family Income	.	990	
(f) Family Allowances—(2 adults and 3 children)				
24	Wheat 15 mds at Rs 8	.	120	
25.	Vegetables, fruits, pulses, etc	.	60	
26	Clothing, etc.	..	180	
27	Medical expenses	..	50	
28	School	..	30	
	Total Family Allowances	.	440	
(g) Repayment Capacity—				
29	Value of family labour	..	180	
30	Net farm income	.	630	
	Total	..	810	
31	Family Allowances	..	440	
	Repayment capacity	..	370	

NOTES—1. Taxes are paid on only 12 acres of crop.
2. Wages for bullock shoeing, etc., paid in kind.
3. Interest of Rs. 30 worked according to proposed amortization scheme.

APPRAISING COSTS AND BENEFITS OF DEVELOPMENT PROJECTS

POSSIBLE REPAYMENT SCHEDULE

Years	Loan	Interest	Principal	Total payment
	Rs.	Rs. A P.	Rs	Rs. A. P.
1st year	3,750	150 0 0	100 Implements	250 0 0
2nd year 1/2	3,650	73 0 0	100	173 0 0
2nd year 2/2	3,550	71 0 0	100	171 0 0
3rd year 1/2	3,450	69 0 0	100	169 0 0
3rd year 2/2	3,350	67 0 0	100	167 0 0
4th year 1/2	3,250	65 0 0	125	190 0 0
4th year 2/2	3,125	62 8 0	125	187 8 0
5th year 1/2	3,000	60 0 0	125	185 0 0
5th year 2/2	2,875	57 8 0	125	182 8 0
6th year 1/2	2,750	55 0 0	125	180 0 0
6th year 2/2	2,625	52 8 0	125	177 8 0
7th year 1/2	2,500	50 0 0	125	175 0 0
7th year 2/2	2,375	47 8 0	125	172 8 0
8th year 1/2	2,250	45 0 0	125	170 0 0
8th year 2/2	2,125	42 8 0	125	167 8 0
9th year 1/2	2,000	40 0 0	125	165 0 0
9th year 2/2	1,875	37 8 0	125	162 8 0
10th year 1/2	1,750	35 0 0	125	160 0 0
10th year 2/2	1,625	32 8 0	125	157 8 0
11th year 1/2	1,500	30 0 0	125	155 0 0
11th year 2/2	1,375	27 8 0	125	152 8 0

contd.

APPRAISING COSTS AND BENEFITS OF DEVELOPMENT PROJECTS

POSSIBLE REPAYMENT SCHEDULE—*concl'd.*

Years	Loan	Interest	Principal	Total payment
	Rs	Rs A. P.	Rs.	Rs. A. P.
12th year 1/2 .	1,250	25 0 0	125	150 0 0
12th year 2/2 ..	1,125	22 8 0	125	147 8 0
13th year 1/2	1,000	20 0 0	125	145 0 0
13th year 2/2	875	17 8 0	125	142 8 0
14th year 1/2 .	750	15 0 0	125	140 0 0
14th year 2/2 .	625	12 8 0	125	137 8 0
15th year 1/2	500	10 0 0	125	135 0 0
15th year 2/2 ..	375	7 8 0	125	132 8 0
16th year 1/2	250	5 0 0	125	130 0 0
16th year 2/2	125	2 8 0	125	127 8 0

THE COST AND BENEFIT ANALYSIS OF THE PROJECT

As indicated to you the last time the class met, the thing to do in examining a project is to make a first approximation of the project on paper and then submit it to the planners responsible for the project. This has been done and the project was submitted to the Chairman of the Thal Authority.

The Chairman of the Thal Authority has redrafted the project in terms of Costs and Benefits and his calculations are as follows :

I.—Primary Project Costs : The Primary Project Costs of the Thal Development Project are the value of the goods and service (land, labour, and materials) used for Equipment (Establishment), maintenance and operation of the Project. The capital costs or materials required to set up the Thal Development Project (as distinguished from the *Thal Irrigation Project* and the *Thal Roads Project* on which expenditure is accounted for separately, and is not included in the accounts of this Project) are as follows.

1. Cost of acquisition of land. The Scheme for the Development of Thal Area makes provision for cost of acquisition of 600,000 acres of land at Rs 40 per acre. This was based on the ordinary law of acquisition of land in Pakistan. The ordinary law of acquisition has, however, been

APPRAISING COSTS AND BENEFITS OF DEVELOPMENT PROJECTS

amended by the Thal Development Act, a special law promulgated in 1949; and the Schedule appended to that Act. This amendment ensures that owners of land get no more than the capitalised value of the net annual income which they derive from the land, and therefore, excludes potential value, or the unearned investment accruing from the execution of the Thal Project. Hence the cost of acquisition of land would be reduced to an average of Rs 15 per acre, as against Rs. 40 per acre provided for the scheme.

(In thousands of rupees)

The cost of acquisition of 600,000 acres at Rs. 15 per acre would therefore be	9,000	
2. Breaking and Development of land. This includes the following		
(a) Capital cost of tractors ..	6,324	
(b) Operational charges including Fuel, Lubricants & Salaries of staff ..	11,092	
(c) Maintenance and repairs at 50 per cent of the capital cost of machinery ..	3,162	
(d) Miscellaneous and unforeseen ..	1,562	
		22,140
3. Construction of houses for peasants and artisans ..		34,800
4. Community buildings and service in the rural areas, including creteways water supply ..		12,600
5. Construction of markets and provision of service in urban areas including cost of sewage and water supply ..		34,400
6. T. D A Buildings and storage bins ..		3,600
7. Advances to settlers ..		18,398
8. Animal Husbandry Scheme ..		4,287
9. Health and Education ..		4,379
10. Afforestation ..		11,000
11. Operation charges :		
(a) Salaries and contingencies ..	7,660	9,820
(b) Maintenance of T D A buildings at ½% of capital cost of item (6)	540	
(c) Depreciation at 1½% of item (6)	1,620	
Total ..	9,820	
Total ..		164,424

APPRAISING COSTS AND BENEFITS OF DEVELOPMENT PROJECTS

II.—Interest charges : The total expenditure on the project is thus estimated at Rs. 164,424,000. The funds to meet the expenditure will be raised as follows :—

		Rs.
Grants from Provincial Government	..	18,322,000
Grant from central Government	..	10,421,000
		Rs
Current Income, 1950-51	..	332,000
1951-52	..	2,352,000
1952-53	..	15,012,000
1953-54	..	17,435,000
1954-55	..	9,490,000
		44,621,000
Loans	..	91,060,000
Total	..	164,424,000

It is intended that the loan should be repaid within 25 years from the date of that loan is taken. The average interest charged by the Central Government on loan is 2 to 3 per cent. For the purpose of calculation, however, a rate of interest at 4 per cent is assumed. The average loan investment for the 25 years period may be calculated as follows :—

(a) $91,060,000 \div 25 \text{ years} = 3,642,400 = \text{loan investment per year and the amount of loan in the last year}$

(b) $\text{Rs } 91,060,000 \text{ plus Rs } 3,642,400 = \frac{94,702,400}{2} = 47,351,200$
average loan investment

(c) $\text{Rs } 47,351,200 \times 4 \text{ per cent} = \text{Rs } 18,94,048$ interest per annum chargeable to the project.

(d) Total interest chargeable on a period of 25 years would be Rs. 47,351,200.

III.—Total Costs : The total costs of the Project may, therefore, now be recalculated as follows :

(In thousands of rupees)

A —Capital Cost

1. Cost of land	9,000
2. Cost of tractors	6,324
3. Construction of houses for peasants and artisans	34,800
4. Rural community buildings and service	12,600
5. Urban buildings and service	34,400
6. T. D. A. buildings and storage bins	3,600

APPRAISING COSTS AND BENEFITS OF DEVELOPMENT PROJECTS

	(In thousands of rupees)
7 Advances to settlers	18,398
8 Animal Husbandry Scheme	4,287
9. Health and Education	4,379
10 Afforestation	11,000
Total	138,788

B.—Maintenance and Depreciation	
1 Maintenance cost of tractors at 50% of capital cost	3,162
2. Maintenance cost of T D A buildings at $\frac{1}{2}$ % per annum for 30 years and depreciation at $1\frac{1}{2}$ per cent per annum for 30 years	2,160
Total	5,282

It will be observed that maintenance has not been provided on machinery other than tractors such as Transport Machinery. This is because the cost of transport units will be met from the cost of works on which the transport is used. Similarly, maintenance has not been provided on physical structure and equipment other than T. D. A. buildings. Houses for peasants and artisans will be sold to settlers who will be responsible to maintain them. Under the provision of Thal Development Act when any works or services are completed they are handed over to the local authorities who are bound by the law to maintain them. The cost of such works or service may also be recovered from the local authority concerned under the direction of Government. Similarly no amount has been provided for depreciation, and no credit for the value of physical structure or machinery has been taken on the benefit side.

	(In thousands of rupees)
C—Operational Costs	
1 Operation cost of tractors	111,092
2. Other operational costs	7,660
3 Unforeseen and Miscellaneous charges	1,562
Total	20,314

D—Interest charges on loan 47,351

Recapitulation—The total costs of the Thal Development Project would therefore

	(In thousands of rupees)
1 Capital cost	138,788
2. Maintenance and depreciation	5,282
3 Operational costs	20,314
4 Interest charges	47,351
Total	211,735

APPRAISING COSTS AND BENEFITS OF DEVELOPMENT PROJECTS

IV—Benefits The benefits of the Thal Project may be set down as follows :

	(In thousands of rupees)
1 Sale of land (rural)	59,400
Interest	29,300
2 Sale of land (urban)	21,080
3. Recovery of expenditure on peasants and artisans houses	34,800
Interest	4,170
4. Recovery of advances to settlers—	18,698
Principal Interest	1,542
5. Income from afforestation	11,000
6 Income from Animal Husbandry	843
7. Recovery on account of cost of sewage and water supply in urban area—	18,732
Principal Interest	10,489
8 Grants in aid Provincial Government	18,322
9 Grants-in-aid Central Government	10,421
Total Benefit	238,857

V—Benefit-Cost Ratio Comparing the total benefits to the total costs, the benefit-cost ratio of Thal Development Project indicates that the benefits are greater than the cost. Dividing the total benefits by the total cost, we get a ratio of benefits to costs of—

$$\frac{\text{Total Benefits}}{\text{Total Costs}} = \frac{238,857}{211,735} = 1.13 \text{ to } 1$$

The above ratio indicates that for every rupee of costs, the benefit will be Rs 1.13. It will be found that the Thal Development Project is a self liquidating Project. The economic benefits to Pakistan are however greater than that indicated by the ratio of benefits to costs.

(Chairman Thal Development Authority 10-11-50)

PART III
METHODS OF ECONOMIC FORECASTING
BY
DR. MORDECAI EZEKIEL

METHODS OF ECONOMIC FORECASTING

I Need for Forecasting in Project Appraisal

FORECASTING IS INEVITABLE

In estimating the income which a typical farmer will be able to earn on a project, we have to determine both the quantity of various products he will have available for sale, and the quantities of production goods he will need to buy. We also have to estimate the prices he will probably obtain for the cotton, wheat, or rice, and the prices he may have to pay for plough, seeds, or feed or the wages for labour he will be hiring. In making the farm estimates that you worked out last week with Dr. Taylor, you used current prices only. But when you use current prices in working out returns over the next one year, two years, five years or ten years, you are assuming that the prices then will be the same as they are to-day. That is only a rough first hand approximation. Actually prices are always changing. Future prices will probably be higher or lower than now. You therefore have to study the question of how prices are likely to change, as well as what the cost of construction will be and what the production will be in physical terms.

A second point equally important is forecasting the physical requirements for a project. In deciding how to build a port, you have to decide the capacity of the port, the number of wharves to be built, the size and weight of the unloading cranes to be installed, and the capacity of the railroad track.

These depend again on how much volume that port is going to handle. If you build it too small, it may limit the development in the region. If you build it too big, it may involve a heavy excess capital and eventually high operating charge which may become a burden. As Dr. Lund pointed out, in deciding how big the Chittagong Port should be it is necessary to study the question of how much jute the region should produce and export. In expanding the Port of Karachi the question would be involved, what is likely to be the future traffic in wheat and in cotton and in imported goods. Forecasting the future volume means economic forecasting, i. e., to find and judge from the evidence and information available now what is likely to be the future development.

BASIS FOR FORECASTING

Is there any scientific basis for forecasting the economic future? If there is no scientific basis then it is an impossible job and you might as well do it the way of many businessmen and farmers do, which is to make a rule-of-thumb guess.

What is forecasting and how does it work? Forecasting simply means estimating to-day what will probably happen in the future. We are all forecasting all the time. If you decide in the morning to wear a coat, because you think it is going to be a cold day, you are forecasting the temperature. If in a rainy climate, you decide to take an umbrella or carry your rain coat,

you are forecasting rain. If when going on a journey, you decide to take cool clothing or warm clothing with you, that decision is based on forecasting.

Even engineers must forecast When an engineer builds a bridge he forecasts that the material and the design he is using will have the strength to carry the load for which the bridge is designed. The same is true when an architect or a builder builds a house. The size of the beams and planks he puts in the roof and in the floor will determine how much load it will carry. Those decisions are based on studying the strength of the material and on mathematical and physical rules. As someone has said, a big bridge across a river is carried in the hand of the physical formulae and the mathematical equations which the engineer works out. The engineer, in plotting his equations and analysing the strength, is forecasting the weight it will carry. Dr. Lund mentioned the other day many of the marvellous structures still standing here several hundred years old. Structures two thousands years old are still standing in Greece or in Egypt, even those to five thousands years old. Such structures are monuments to the skill of the engineers and architects, who long ago found out the strength of the materials and found out how to put them together so well that they have lasted ever since and carried the load.

But even engineering forecasts are not 100% perfect. An engineer may figure how much water a dam will stand or how much water a canal will carry, and an unusual flood may wash it all away. Even with all the scientific engineering experience in the United States, we had a great suspension bridge collapse just about two or three years ago. The bridge was strong enough to carry the load, but with heavy winds against it, the bridge started vibrating sideways and up and down and collapsed. It was one of the longest in the world. A new one was built after studying how to build that type of suspension bridge so that it could stand the wind pressure as well as the weight. So even engineering forecasts are not yet 100% perfect.

Weather forecasting is another example. You know in the United States and in many other Western Countries, we have a "monsoon" most of the time. The climate may change any day, almost any time of the year, and our weather is about like during the monsoons here. It does not rain all the time, it may rain one day and be clear for two or three days, then it may rain for two or three days more, or the temperature may rise suddenly or fall very suddenly. Weather forecasts are, therefore, very important. They are important to farmers who are planting crops, and to many agricultural and even industrial programmes. In weather bureaus scientists all the time are studying records of the weather, of the temperature, the rainfall and the snow. They have developed by analysing the movements of the temperature and the rainfall and the air itself, the science of meteorology. They send balloons to high altitudes all over the country and radio reports come back from those balloons of what's happening up there. They are gradually improving the methods of forecasting the weather. Daily weather forecasts are issued saying for the next day whether it is going to be hot or cold, whether there is going to be a fog, whether it is going to rain or snow or whether it is going to be cloudy or sunny. These weather forecasts for one or two days ahead are now generally about

75 to 80% accurate. They are never perfect. Sometimes there are thunderstorms when they said it was going to be a perfectly clear day, sometimes when they forecast heavy rain instead it is a sunny day. But most of the time, three times out of four, they are correct. Recently they have been developing methods of telling the weather even several days or weeks ahead. Weather forecasting is a much more hazardous activity than engineering forecasting. The strength of materials stays just about the same—you don't have a continually changing environment when you are forecasting engineering. With the weather you have a continuously changing environment. Yet the weather forecasters have learnt by taking first the present conditions, second the previous changes, and third what in the past has happened after conditions like the present, to make pretty scientific forecasts of the future.

Economic forecasting is in many respects like weather forecasting. It involves all the relevant facts about the present situation and about the way in which the situation has been changing. Many times you have to take into account political facts as well as economic. In forecasting economic developments, somewhat the same technique applies as in weather forecasting of judging future developments from present conditions and past experience.

FORECASTING GENERAL BUSINESS CONDITIONS

In general, economic forecasting in the past has included two different kinds of forecasting. One type was called General Business Cycle Analysis, especially for highly developed economies like the U. S. and U. K. but also with significance for the less developed economies. It covers changes in price levels, profits, and all of the different things which were involved in what was called the analysis of Business Cycles. Those of you who studied economics know it was started by Henry C. Mitchell about 35 years ago. It involves trying to forecast the future changes in general business conditions. Harvard University research workers began issuing general business forecasts about 30 years ago, and the Babson Institute for a long time issued general business forecasts. The Harvard forecasts were based on analysis of the trends, cycles and critical turning points in various economic series. The forecasts they made over a long period of time were about half right and half wrong. You could have done just as well by throwing up a coin, 50% right and 50% wrong. The Babson Institute made their forecasts on a somewhat similar basis and their forecasts were also about 50% right and 50% wrong. The early general business forecasting did not prove to be very accurate. In the years since World War II, a new method of general economic forecasting has come up based largely on the Keynes theory of economics. It might be called forecasting investment and savings. Nearly all countries in setting up their general economic programmes, now use that method to a greater or lesser extent, such as in the annual economic survey of the United Kingdom and the annual forecasts of Canadian investment and business activity. The U. S. Council of Economic Advisors in publishing a quarterly Economic Report, use fundamentally the same method. The method has not been in use

long enough yet to have any final judgment, but it has been giving good results. It certainly is a much more scientific method than the earlier studies of cycles and trends, and is beginning to give hope that the general level of business activity and employment can be forecasted and even controlled on a reasonably scientific basis, in countries which have the necessary information about their economic systems.

FORECASTING COMMODITY SITUATIONS

There is a second method, which might be called Commodity Situation Analysis. In the U. S. prior to the Agricultural Control methods inaugurated by President Roosevelt, farmers producing pigs were very likely to expand production whenever prices were high, and they were making big profits, and to reduce production greatly whenever the reverse was true. Because of the time necessary after breeding for gestation and for feeding the young pigs, it usually takes a year and half to two years between the time the farmer decides to grow more pigs and the time marketings are affected. As a result of that, the sequence of pig production in the U. S. over many years followed quite a regular cycle, moving up and down with peaks three to four years apart. Generally pig prices followed a reverse cycle of about the same length. When we in the Department of Agriculture went out to talk to farmers in the early twenties about their plans for the future, I always started by saying that when a farmer plans the production for next year, he usually assumes that the prices next year are likely to be the same as prices this year. If he has made a big profit this year, he grows more of the things on which he has made a profit, if he has made a loss, he grows less of the things on which he has made a loss. And I also told them that the only thing we know from the past is that prices next year are going to be *different from what they were this year*.

A great deal of work has been done in the Department of Agriculture and in the agricultural colleges in the United States, with similar work in other countries, on the way in which production affects prices. Prices were related to production, and to carry over from the year before. In the case of cotton, both the production in other countries and the level of demand as indicated by business activity were also found important. Studies were also made of the extent to which producers responded to price changes and what the most likely future production was going to be. Crop estimating methods were improved. Farmers were asked, for example not only "how many pigs did you raise this year?" but also "how many pigs have you farrowed this spring, which will be coming to market later?" or "How many Cows have you bred for farrowing in the following spring?" "How many sows do you intend to breed next year?" From the resulting data we could judge not only what farmers had done and were doing, but what they intended to do in the future.

OUTLOOK REPORTS—U. S.

Beginning in 1922, the Department of Agriculture started publishing an annual *Agricultural Outlook Report*, which took up the economic situation of agriculture, commodity by commodity, appraised the last crop year, analysed what had happened then and which way supplies and demand were changing, and forecasted what was most likely to happen next year and frequently the year after that. The forecast was carried as far forward as was necessary to give farmers a guide in planning their production, one year ahead for annual crops, or two years to four years ahead for long term products like pigs or beef cattle. We knew we were going to be wrong part of the time, but made the best judgment of the future we could. The first publication of the *Agricultural Outlook Report* was in 1922. It was considered too dangerous then for a public agency to make economic forecasts, so after the Department had organised all the material, it called in a group of technical experts in the fields of economics and agricultural economics and asked them to write a report and sign it over their names. After the first report was put out on the authority of these visiting economists, we found it had worked out pretty well. It was done by the Department itself thereafter. Among the experts called in 1922 to write that first *Agricultural Outlook Report* was a young magazine editor who had done a lot of work on studying farm prices, Henry A. Wallace, who later became Secretary of Agriculture and then Vice-President of the United States.

These Outlook reports have been issued annually or semi-annually ever since. A conference is held in Washington each year of people from all over the country, state officials and national officials, to consider the outlook, and with to discuss the report. The accuracy of the forecasts has varied between 85 and 90% of the commodity forecasts right each year. During the same period that attempts to forecast the General Business cycle were not working at all, these attempts at forecasting individual commodity situation were working. It is easier to forecast what will happen to an individual commodity, within the general economic framework, than it is to forecast what is going to happen to the economy as a whole. There is thus not only a scientific basis for making economic analyses and forecasts, but also a very considerable body of experience of over 30 years on how to do it. Any of you can write to the U. S. Department of Agriculture or get through the U. S. officials in your country, copies of the annual *Agricultural Outlook Report* and the *Agricultural Outlook Charts* which explain the forecasts.

OTHER OUTLOOK REPORTS

Canada, Australia and other countries also get out similar agricultural outlook statements. F. A. O. has been working to extend to the international field what has already been done in individual countries. The individual commodity reports, which F. A. O. has been gradually

extending, provides part of the basis. Beginning two years ago F A O started issuing an annual World Agricultural Outlook Report. The data for the world are much less complete than for the U S or U K, and commercial situations are very different from country to country, which makes them more difficult. The first of these World Outlook Reports, prepared in 1947, was considered by the F A O Conference that year, but wasn't widely circulated. In 1949 we published for the first time a World Outlook Report (Current Outlook for World Demand and prices of Farm Products F A O, Washington, August 1949). This forecasted economic situations for the next two years ahead around the world, and also appraised prospects for the major agricultural commodities for a year or two ahead. (World Outlook for individual commodities, F A O, Washington, August 1949). That was published in two different volumes, and was discussed by the F A O pre-conference regional meetings held last year. The Singapore meeting, which I attended as a representative of the Economics Division, discussed this economics outlook, both by commodities and in general. Just before I came on this present trip we just finished the World Agricultural Outlook Report for 1950.¹

Long-term forecasts needed—So this is some of the information which is available to countries in doing the economic forecasting needed for appraising your development projects. It does not give you everything that you need. You need to know not only about what economic and market conditions are likely to be in the next year or two, but also what are likely to be the developments over the next 10, 15, 20 years or longer. In subsequent lectures I will try to bring in factors which must be considered in studying longer term plans. Taking cotton for an illustration, the question which Mr. Lund raised, How much cotton should the Pakistan plan to grow? (or) How much rice should Burma plan to grow? How much should you plan to grow for export as well as for domestic use in the country?

These all involve long-term considerations.

Question—Can unpredictable incidents or unpredictable items such as war or diseases or say drought be taken into account or will they throw your forecast out?

Answer—Obviously, like the effect of an earthquake on a building, any forecast may be completely destroyed by a change in environment. Many forecasts went wrong when war broke out in 1940. A number of forecasts went wrong the summer of 1950 when the Korean hostilities started. In dealing with those one has got to try to make the best appraisal you can, of the possible economic significance of world political situations. Our own Agricultural Outlook in F. A. O. in 1950 had to be completely revised after the Korean war started. The enormous increase in the American armament programme is going to produce economic consequences for the next two or three years regardless of how soon the fighting stops in Korea. Of course if political conditions materialise to the point where a third World War breaks out every thing will change. We know from experience in two World Wars, that in a World War all business and all economic activity is subordinated to military activities, and war economies are set up in every country. No one can say whether another World War would last several years, or be over in three or four weeks because of

¹World Outlook and State of Food and Agriculture, 1950, FAO, October, 1950

effect of the Atomic Bomb. If a World War does come again, everything is going to be completely changed from what we are seeing now. But men have to plan on life rather than death. When anybody builds a house he always expects he would be there next year or else he would not build it. Since an economy has to count on life instead of death, we always plan hoping that wars can be averted. If they do come, then we will have to take them into account. You can never tell when disease is going to break out, or when a flood or drought will occur, but you can tell from a study of the past how often they have occurred. You will see later when our flood experts lecture, how they can forecast the frequency of disastrous floods from a study of the past frequency and intensity of high rainfalls and high waters. The fact is that where you do have a large variability of what may happen, you have some experience in the past of what that variability has been, and you have to study that and take that into account.

Question—The question is raised as to the relations between the U. S. Commodity Credit Corporation and the U. S. Department of Agriculture.

Answer—That is quite a large issue. Actually the C. C. C. is a bureau within the U. S. Department of Agriculture. It raises an important point. Since the evolution of economic control measures in the United States, we have to consider in economic forecasting not only what are the prospective economic conditions, but what are the regulations in respect of minimum prices or the level at which loans could be established. This is true of agricultural control measures not only in the U. S. but also in many other important countries. The New York Times just a couple of weeks ago reported that there will be no control at all of cotton acreage or production in the U. S. in 1951. That is a very important fact for cotton growers in other countries. Many important economic developments are reported in daily newspapers, and if you read them regularly you are bound to get information which is useful for the sort of work we have been discussing this morning.

II Steps in Analyzing Price Behaviour—Demand

The problem of forecasting the future demands for cotton is simply one illustration of the kind of problem which requires economic forecasting.

SELECTING BASIC DATA

In dealing with this problem, first you must record the basic data (figures) from reference books. You copy them down, make a table of them. You may take figures from several different pages or sources and assemble them on the same sheet. One page might give you the production each year in your country. Another might give you the consumption of cotton each year in your country. A third might give you the amount of exports each year. Another might give you the world consumption. Each one

METHODS OF ECONOMIC FORECASTING

of these figures would be put down in your table; giving the data for as many years as you are able to get them for or as many as you are interested in.

One important point in recording the data is to put down on the first table in which you enter the figures, the sources from which you got each series of figures. This should include the name and date of the publication you took it from, and the page number, so you can always be sure exactly where they came from. Data can be obtained from such reference books as those we have assembled in our library here (list to be published in the abstract of lectures).

ANALYZING THE DATA

After you have collected the data, the next thing is to study them. One way of analyzing them is by drawing a chart. After you have drawn a time chart, you may fit a trend to indicate the general changes that have taken place in the past in that series. Then you may relate changes in one series of data to changes in another series. You may prepare a chart that shows both changes in production and changes in prices, or changes in production or exports in your country, compared to changes in world production or world exports.

Then you may study more carefully just how one series changes with another. That may involve preparing a correlation or dot chart, like the one you made on potato prices and potato production, by which you can tell more closely the precise way one variable has changed with changes in another variable. You have studied these methods of analyzing data in our review of statistical methods. Now you will start using them as laboratory tools in studying real economic happenings.

DIFFERENT KINDS OF FORECASTS

Forecasting for development projects involves three sorts of things. First, we have to forecast what is likely to happen to the price and demand for the products that are to be produced in the development project: farm products or other products. Second, we have to forecast what is likely to happen to the prices of the needed production goods, such as tractors, fertilizers, etc. And third, we have to estimate what is likely to happen to the cost of the things needed to build the project. The last does not involve so long a forecast as the others, because you are most concerned with the costs of construction material, labour and machinery, during the period the project is being built. These costs are nearer at hand in time and are easier to estimate. Many of them can be determined quite accurately by letting out contracts at fixed prices to contractors to build the structures. But if inflation comes along and the costs of construction rise, you may find the contractors cannot fulfill their contracts without going bankrupt, and even the contract prices may have to be revised upward.

MEANING OF CHANGE IN DEMAND

In any one of these items, the fundamental issue to be considered can be examined from three aspects. Two of these relate to the balance of supply, demand and price, the third relates to the structure of prices, as between prices in different places or different markets. The balance of supply, demand and price can be considered more clearly, if you break it into two questions. One, what is likely to be the future demand for each product in turn? Second, what is likely to happen in the future to the supply of the particular item concerned.

What does demand mean? How can you measure it? The concept of the level of demand is difficult to understand, if you have not studied economic theory. You sometimes see in the newspapers, in market reports that "demand was low to-day and prices fell because supplies were large," or that "supplies were short and demand was therefore high and prices rose." Actually a change in price caused by a change in supply, is not in the economist's terminology a change in demand. The change in price was due solely to the change in supply, not in demand. The economist defines demand as related to the level of the demand curve (Figure 1)

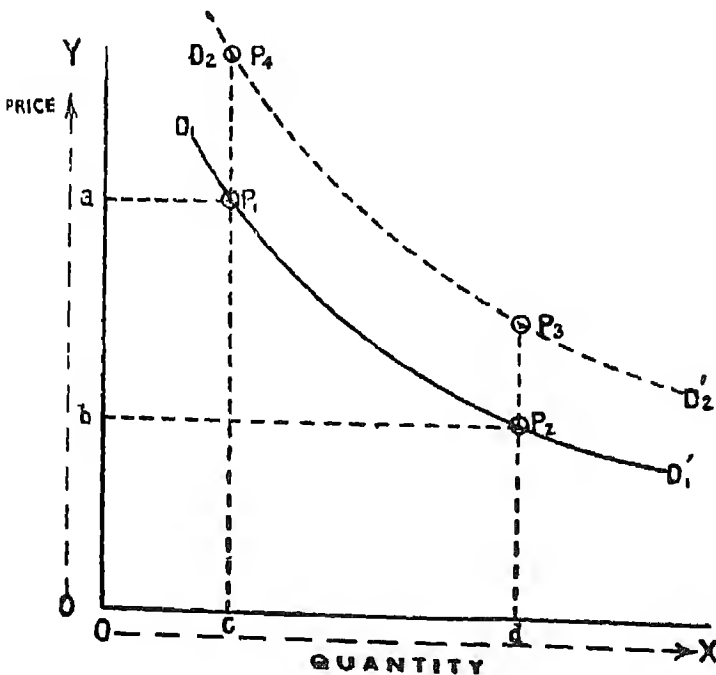


FIG. 1

This curve illustrates the relations between prices and quantities sold on a given market. The prices prevailing on that market are represented by the vertical distances, O to Y , the quantities which can be sold at those prices, by the horizontal distances, O to X . If the quantity available to be purchased is small, say oc , the price will be high, as represented by the distance oa . If the quantity available is large, say od , then the price will be correspondingly low, say ob . The dots made by the intersections of the corresponding price and quantity lines, p_1 and p_2 represent graphically these two combinations of prices and quantities. The curve D_1D_2 drawn through these two dots (and other similar combinations of prices and quantities) is called the *demand curve*. It shows the expected relation between prices charged and quantities available for sale on that market. As long as a change in price is due to a change in the supply offered, the point still falls on the point represented by that price. Supply combination on the curve, the economist says there has been no change in demand — the same demand curve explains the relation. But if something occurs to alter the willingness of people to buy — such as an increase in employment or wages or an increase in the price of a competing product — then the higher demand will be represented by a new and higher demand curve, represented by the line D_1D_2 . As shown by this curve, the quantity od which previously sold at the price dp_2 will now sell at the higher price dp_3 . Or, in a period with short supply, such as the quantity oc which previously would sell for the price cp_1 , with the new higher demand the price will be higher cp_4 .

Changes in demand thus mean an upward or downward shifting of the demand curve, so that prices become higher or lower than they otherwise would be for the same supplies.

WAYS OF MEASURING DEMAND

Having defined demand in these terms, the next question is, how can we measure it? One step in measuring demand is to examine the quantities consumed in the country. For export demand, we will also want to examine what quantity has been exported, year by year. Then we must examine whether the changes in consumption have been only such as could be explained by the changes in prices, on the usual relation of price to consumption, or if the price changes also reflect changes in demand. For example if the price has risen over a given period and consumption has also risen over the period, then it is clear the demand has increased, because not only has the country been willing to buy and consume an increased quantity, but it has been willing to consume more despite a higher price. The only way there could be a higher price for a larger consumption, on our supply-price chart, is for the level of the demand curve to shift upwards.

ALLOWING FOR PRICE-LEVEL CHANGES

One other point is the difference between nominal prices and real prices. Prices don't always mean what they seem to. What a rupee

would buy in 1910 was something entirely different from what it would buy in 1920 or 1930. A rupee to day again has a buying power quite different from what a rupee would buy in 1930. In addition to the concept of the market price, there is also the concept of the *real price*. Real price means the price relative to the average cost of other things. How to measure the average cost of things is difficult. One way of estimating the real price is to divide the price of the commodity under study by an index number which expresses the average cost of all products as a whole. Dividing the price of a given product by a price level of the average cost of all products is called *deflating*. After such division, you call the corrected price a "deflated" price. By using deflated prices you can determine if the product became more or less expensive, compared to the prices of other products, and determine whether demand is rising or falling in terms of the *real prices*.

This involves determining the relation of consumption to the real price, and seeing if that relation has been shifting upwards or downwards. If you are using real prices, you also have to consider what is likely to happen to the general price level. Is the general price level itself going to rise or fall? You must recognize this point, and indicate what assumption you are making on the price level for the future.

Another approach is to study what has happened to the trend of demand, in your own country compared to that in other countries. That involves examining the relation of price to consumption for each country considered, or for the world as a whole.

ALLOWING FOR POPULATION CHANGES

If you are dealing with data over a very long period, you may want to reduce the consumption data to *per capita* consumption, i.e., to consumption per head of population. We know that the population has been growing and we can expect the quantities consumed also to grow. When you consider the consumption in *per capita* terms, you ask whether consumption has been growing more rapidly or less rapidly than the number of people involved. We can forecast future population by studying its trends more readily than you can most other economic data. Except for wars or other great catastrophes, population growth in nearly every country follows a pretty continuous trend. Sometimes it grows more rapidly, sometimes less rapidly. If we plot the trend in population growth, we can make forecasts by extending these trends to give us some basis of what we can expect for the future population.

When we study the growth of consumption related to population you will also see that consumption *per capita* may change over a number of years. In tobacco for example, the use of cigarettes has extended very widely in many countries over the last 10 or 20 years, and the average consumption of tobacco *per capita* has gone up very sharply. Studying that growth of average consumption *per capita* in different countries gives us another factor which we can project into the future with some assurance that the growth is likely to continue. Further, we can study variations in consumption *per capita* to see what are the factors which influence it. For example, cotton consumption in the United States, the United Kingdom,

and in other highly developed countries is very responsive to business activity. When people are fully employed and are getting good wages they buy more cotton products. When they lose their jobs, when incomes are very low, they can't stop eating, but they can stop buying new shirts and new led clothes, and so cotton consumption may fall very rapidly in years of declining industrial production and declining employment. Further more, cotton is the raw material for many industrial products. Automobile tyres, canvases and industrial belts, use large quantities of cotton, so changes in industrial activity affect cotton, both indirectly through the income of the consumers, and directly through their effect on the use of cotton as a raw material for industrial products.

MEASURING THE RELATION OF SUPPLY TO PRICE

To measure these relations more exactly, we may make a dot chart to show the relation between *per capita* consumption and real prices in an individual country, and then determine how closely the yearly differences from the average line of relationships (the average demand curve) are related to changes in *per capita* real national income from year to year, or to changes in industrial activity from year to year. This gives us a way of determining not only *whether* demand has changed, but also how far the changes in demand reflected changes in logically related factors.

VARIATIONS IN DEMAND BETWEEN COUNTRIES

Another way to approach the question of demand is to consider the difference in the level of demand from country to country at the same time. One way to measure that is to take the difference in the quantity consumed *per capita* of population, from one country to another, and to relate this to differences in income *per capita* and other related factors in each country. That is particularly valuable if you were considering the question, for example, of how much cotton your country will consume in 25 years from now. If you have a development programme, for example, that should increase the average income *per capita* say 25% in the 25 years comparing the differences in consumptions between the two countries with such differences in income will provide a sound basis for estimating how much you could expect consumption to increase in your own country, if you are able to bring into reality the increase in income that you are assuming.

Some rough data on that subject, for a few countries or rather a few regions of the world, illustrate this method. These data are taken from the FAO report, Food and Agricultural Programmes and Outlook for Agriculture 1950-51. This summarizes for each region of the world the production target, and the export and import targets. Adding the expected production for each region, and the expected net imports (by subtracting net exports) we can calculate the projected consumption of cotton for 1950-51 for each region. Then, taking the population of each region also given in the same FAO publication we can calculate the average consumption of cotton *per capita* of population for each. The another FAO publication (Current Outlook for World Demand and

Prices of Farm Products, 1949, page 20) gives data on the average income per capita in each region, reduced to U S dollars

The resulting comparison between cotton consumption and income per capita is as follows —

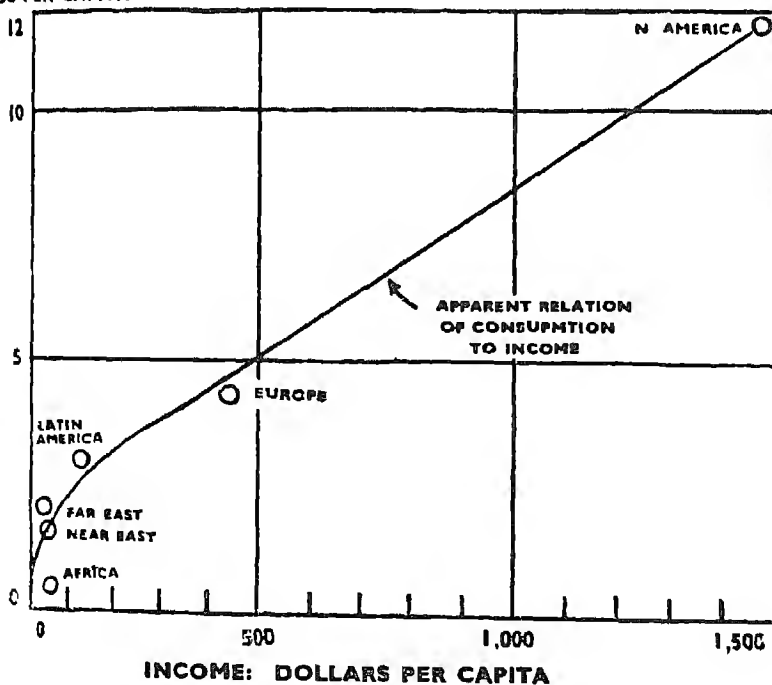
Region	Est mat'd income per capita 1948	Projected cotton consumption per capita 1950
	U S Dollars	Kilograms
Africa	*50	0.2
Near East	*50	1.1
Far East	*50	1.1
Latin America	*100	2.6
Europe excluding U S. S. R. . .	450	4.6
North America	1475	11.8

*Rough estimates, no exact data available for this year

The relationship can be measured more closely by a correlation chart, as shown in figure 2. This relation between the income and consumption can then be used as a basis for determining the increase which you might expect in your country in the consumption of cotton as the national income increases.

FIG 2. INCOME PER CAPITA AND COTTON CONSUMPTION

COTTON CONSUMPTION
KILOS PER CAPITA



Here you have one method of arriving at a basis of saying what cotton consumption may be expected to be in the future compared to to-day

VARIATION IN DEMAND WITHIN A COUNTRY

A second way of estimating prospective cotton consumption in your country is to analyse the past history of consumption. Consumption in your country may have been rising very rapidly in the past. Examination of the data will show you whether that is so or not. If it has been, the next question to ask would be "Has national income in your country also been rising over the same period?" When you compare national income at different times for the same country, you have to adjust to allow for changes in price level. If the national income is twice as great, merely because prices on the average are twice as high, that does not mean that there is any real gain in income. So before comparing national income at different times you have to state those in terms of real national income or deflated national income, as explained before. You have to divide the national income as estimated for each year or for each period, by the corresponding index of prices or cost of living at the same time. This gives a measure of real national income time. Comparing changes in real national income in your country with changes in the consumption *per capita* of cotton (on whatever else you are estimating) will give you a picture for your own country of way in which the consumption has changed with changes in real income. You can thus measure the way of the demand for cotton has shifted upwards over time, for your own country.

EFFECTS OF SUBSTITUTES

In studying the trend of demand, whether in an individual country or between countries, one has to ask whether the position of the demand schedule, as shown by the relation of prices to consumption, has been influenced by forces which move it up or down. These may include population changes, changes in price level, changes in the buying power (income) of consumer, or in uses of substitutes. When studying the consumption of silk in the U S, you will find that it will have very little meaning unless you took into account not only the consumption of silk each year, but also the consumption of rayon and nylon. You could not necessarily add them up together. Rayon for example substitutes partly for cotton, nylon more directly for silk. You would find over the period, that the quantity of silk consumed at the same price is much lower today than pre-war, and that at the same time the quantity of nylon consumed was very much higher and the quantity of rayon consumed was much higher. You could work out a multiple correlation analysis by which you could say that each increase of one unit in nylon resulted in reduction of so many units or such and such a part of a unit in the consumption of silk and that each unit of rayon displaces so much silk. These methods give you an objective basis of determining what has been happening to demand and hence a firmer basis for forecasting what is likely to happen to demand in the future.

EXAMPLE OF A SPECIFIC DEMAND ANALYSIS

To indicate just what is involved in making a study of this sort, even is a relatively brief analysis of factors affecting consumption of cotton, I started looking up the data for the U S to show year by year, (1) the cotton consumed in the U S *per capita* of population, and then to compare that cotton consumption *per capita* with just two other factors, (2) the wholesale price of cotton, and (3) the industrial production *per capita*. To get three figures, of the cotton, consumption *per capita*, of production *per capita* and the deflated price of cotton, many other data were needed. I used industrial production *per capita*, rather than real national income *per capita*, because of the close connection between industrial activity and cotton consumption, pointed out earlier. In order to bring these series together, five original items were needed: (1) the market price of cotton, (2) the total consumption of cotton, (3) the index of industrial production, (4) population in the country, and then (5) the average wholesale price level. Further when I started looking up the reference books, I found even greater complications. There are three major U S sources which give you most of the U S agricultural statistics: (1) The annual Statistical Year Book of the Department of Agriculture, called Agricultural Statistics. Some of the data are given there and some of the additional data are also given in the Statistical Abstract of the United States, of which the most recent one is 1949. Population data once a year are given in the Statistical Abstract. Population data for recent years for every country that has then are given in the annual statistical year book of the U N. But when we start entering the data, we find that cotton is figured on a crop year basis. The statistics for cotton in the U S data and many other countries relates to the cotton crop year which in the U S is taken as the beginning on the 1st of August, and ending with the last of July. In some tables, however the years were listed as years beginning in July 1929, and in others, the same year is shown as year ending July 31, 1930. You have to read your tables very carefully, to make sure exactly how the tables are set out and then to make sure you enter your data in such a way as to have it all the figures in the right place. But industrial production is shown in a calendar year basis. Now the August 1 to August 1 crop year is very near to half of the one year and half of the next, and so one could make a rough estimate of it by seeing what the average price level for the two years is. That will not, however, always be an accurate estimate, as some times prices may be low the last part of one year and the first part of the next.

After we get these raw figures entered, we still have to divide consumption and industrial production through by the population to get *per capita* figures. We must divide prices by the index of price level, to get the figures in terms of real purchasing power. Only then do we have the data ready to see what relation they show. When the correlation was actually worked out for the data described as a laboratory exercise, it was found that most of the variation in *per capita* cotton consumption in the U S was explained by concurrent changes in the levels of industrial production *per capita*, with no significant further response of consumption to levels of price. After allowing for the effect of changes

in industrial activity, however, a significant long-term downward trend in the level of demand was evident, with cotton consumption—for the same industrial activity lower in 1940 than in 1920. The relations were worked out first for the period 1920—1940. When the data for the post war years were inserted, it was found that the same relations which prevailed in those years explained continued to hold true after the war so that post war consumption could be quite closely estimated, knowing the levels of industrial activity after the war and using the relations and trend line determined before the war.

A parallel analysis of cacao prices and U. S. consumption, made by one of the participants, showed a strong negative relation between price and consumption, and strong addition positive relation between prices and levels of industrial production, but with erratic movements in some years, apparently due to speculated activity causing sudden rises or falls in prices, above or below the normal relation to supply and consumers' buying power.

TWO TYPES OF DEMAND ANALYSIS

Demand can be considered from two points of view. If in a given year, prices of a given product are such and such, what will be the consumption, in the light of that price situation and the other relevant factors. A second way of looking at the question of demand, is what is the relationship between supply available and the prices. That is, if there is a total supply of so much on the market, what will be the price resulting from that supply? The average price for the season can be taken, or the average price for the period for which the supply is measured. These two sound like the same thing, but when you come to deal with realistic data, you find that they are not the same thing at all. These cotton data which I was just discussing are based on the amounts actually consumed in a given year. But consumption is not the same as production. Production, the supply for the year, and the amount consumed, are three different things. Each season there is also the carryover from the year before, so the supply available each season consists of production plus carryover. This year for example the world is very short of cotton, but it is not nearly as short as it would have been if the carryover from the last season had not been extraordinarily high. On the other hand what becomes of that supply is not the same as consumption, because in addition to changes in consumption there will be changes in carryover at the end of the season. The people that are going to store cotton, the speculators who buy cotton and store it from year to year, are competitors of those who buy cotton to spin it into cotton products. So you can have a more complicated analysis, made essentially by the same methods we have been discussing, (1) of the relation of quantities available total or *per capita* to prices per unit, (2) the relation of prices to quantities consumed, and (3) of prices to quantities stored. Each of these relations can be analysed by using appropriate data in a correlation analysis similar to those described earlier.

ANALYSIS OF SUPPLY AND CARRYOVER TRENDS

The question, 'what is happening to supply itself' involves the trend of supply and the factors influencing supply. Supply is composed

both of production and of the stocks on hand. Sometimes in studying supply we may ask not only what has been the trend of production, but what has been the trend of stocks. In products such as cotton or wool or rubber, where the supplies can be stored for a long period of time, the appearance of a surplus or an excess of production over consumption, is evident over several years by the fact of a gradually increasing carryover. If the carryover stocks at the end of the season are successively greater and greater over several years, if stocks increase not only in proportion to the total production but faster than the total production, then it is clear that the world is producing more than it is consuming each year, and more and more of a surplus is piling up. So that is an indication that there is trouble ahead for that commodity. On the other hand if the carryover is gradually decreasing at the same time that world consumption is increasing, less and less will be available at the end of each season. Then it is clear that consumption is outrunning production and that that product is in for trouble of a different kind—production is not keeping up with consumption, a scarcity situation is developing and unless production is soon expanded, there is going to be a very short situation. Examples of the latter sort to-day are coffee and wool. If you study the coffee data and the wool data over recent years you will find that for several years, the consumption each year has been outrunning production, the reserve stocks and carryover have become less and less, and in fact in the case of coffee, actually all the reserve stocks have been used up and none are left at all, except the actual necessary reserves for day to day sales. In 1949, the world had to cut down its consumption of coffee, it had taken up all its reserves and the current crop just was not enough to go round at the previous rate. As a result of that forced reduction in coffee consumption, prices nearly doubled within a few months. Speculators and coffee producers made hundreds of millions of dollars, yet it was clear a year or so ahead what was coming, to anyone who was studying these trends on production, consumption, and carryover. These commodity situations which become perfectly clear, assuming that you really start studying the data, are sometimes still a great surprise to everybody involved including the traders, because they just have not been looking behind the scenes to see what was happening.

III Measuring Effects of Prices on Supply

The price side of the supply and demand equation or supply demand balance can be measured in two additional ways. One is to examine the effect of price on subsequent production, to determine the supply curve in terms of the relation between prices at one time and quantities subsequently produced. A second way is to examine the effect of price on the quantity currently released for sale out of the supplies on hand.

EFFECT OF PRICE ON PRODUCTION

The first approach, measuring the effect of price on subsequent production, involves what the economist calls the long-term equilibrium. If

the price farmers get for cotton or rice are high, in most countries they tend to increase production of that crop for the next year, in the case of an annual crop, or as soon as they can breed and grow more animals in the case of livestock. In many countries cotton acreage will expand in 1951 in response to the exceptionally high prices it is bringing in 1950. You can examine the relation of production to price or acreage to price by making a correlation chart or correlation analysis, as discussed before. One factor will be price for a given season, the other will be the change in acreage or the size of acreage in the next season. In the case of livestock products such as calves or beef cattle, one factor is price in the given period and the other factor is the change in the number produced or marketed sufficiently long afterward to cover the breeding and feeding period. This may be a year and a half later for pigs or three years later for beef cattle.

EFFECT OF PRICE ON QUANTITIES FOR SALE

In the second type, we consider not the effect of price on later supply, but the effect of current price on supply released for sale currently. That really is the demand curve which is usually assumed in economic theory. In economics we also have a supply curve which is explained by the way people who hold the supply are willing to sell at any given price. The total supply in existence is not necessarily the total supply that will be sold, because people that own that supply, either farmers or speculators or merchants, always have at their discretion whether to sell at the price or whether to hold it. They can decide to hold and sell later in the season, or to hold to sell in another season. As economic theory explains, prices in a free market tend to gravitate to that price at which the quantity which holders will be willing to sell is the same as the quantity which buyers are willing to buy. If the price falls below that point, buyers ask for more than sellers are willing to sell. If the price rises above that point, buyers are unwilling to buy as much as holders are willing to sell. The price thus tends to stabilize at the point at which the two, the quantity offered for sale (from the supply curve) and the quantity which is actually demanded by purchasers (from the demand curve) are the same.

CURRENT SUPPLY CURVE AND LONG-TERM SUPPLY CURVE

What might be called the current supply curve represents the supply which will be currently released in a period at a particular price. The long term supply curve referred to earlier is a different supply curve, and relates to the quantity which will be produced in the subsequent period. Therefore the interception of the long-term supply curve and the current demand curve does not give you the current price, but rather it may give the price which will tend to prevail over a long period of time. That may be very important in considering the most probable price over a long period. Some prices are high to-day, in late 1950 cotton for example, not because the

farmers of the world are not willing to produce at current prices more cotton than that which is available to-day, but because of an exceptionally low acreage and low yield per acre in the United States in 1950, which made the supply short and price very high. From a study of the willingness of the world to produce cotton at various prices, we can determine the prospective supply-demand equilibrium over a number of years, which may be at a lower price than that in late 1950.

The statistical measurement of these two supply curves involves different problems. The long term supply curve can be measured by the same statistical technique as for measuring the effect of price on consumption, because there is no circular reasoning to relating the price this year to the acreage or the production next year. When we attempt to measure the current supply curve, however, it is difficult to know whether we are measuring the supply curve or the demand curve. The prices each period are determined by the intersections of the current supply and demand curves. It is difficult to tell whether variations in the location of those price supply positions reflect changes along the supply curve, the demand curve, or both. If the only thing that shifts is the height of the supply curve, then by relating the prices that prevail to the supplies available, we get the demand curve, because while the supply curve changes, the demand curve remains the same, and the intersections of price and supply mark it out. If the demand curve is also changing, say because of changes in business activity, then the intersections do not measure either the supply curve or the demand curve. On the other hand if the supply curve remains fixed and the demand curve varies up and down in different periods, the intersections provide a basis for statistical determination of the supply curve. We are thus faced with the difficulty that if we try to measure the instantaneous supply curve or the instantaneous demand curve statistically, we are not at all certain what we get. If we measure the effect of present prices on future production, however, we are not in danger of circular reasoning, and the statistical analysis can be quite sound. Similarly when we ask what is the effect of price on consumption, we are not in the danger of circular reasoning, because here we are not talking about the interception of two curves, we are talking about the quantity that is consumed at a given price. If we have data on these two variables that gives us the consumption demand curve, the demand curve in terms of the quantity of product to be consumed.

DETERMINING THE CURRENT SUPPLY CURVE

The current demand curve is the sum of the demand curve for the quantities to be consumed plus the demand curve for quantities to be held for future sale. When prices are very low speculators on the market will add to their supplies and they will release the product when prices are very high. The actual market demand must take into account the willingness to store as well as the willingness to consume. Similarly farmers will hold more or less back out of the existing supply depending on price. If potatoes prices go very low, farmers may leave some in the ground, undug, or in some cases, feed them to livestock. This is what you might call a

METHODS OF ECONOMIC FORECASTING

reservation demand on the part of the producer to hold the product back, either to destroy it or hold it for use on their farms. Another reservation demand is by those who want to store it. This demand for holding, the quantity stored plus the quantity held back on farms, subtracted from the total supply, gives you the market supply curve. Now if your data are sufficiently good, so you can get actual figures of what farmers hold on their farms and actual figures of the changes in amounts in storage, you can then subtract these from the total supply and get final figures of the quantity of product released for sale each period. Then by relating that quantity released for sale over successive periods to the prices prevailing for each period, you can determine the current supply curve.

But if you measure the long term supply curve and the consumption demand curve you can get from those a good idea of the underlying facts of the market, regardless of whether or not you can increase the current supply and current demand curve.

CHANGES IN THE LEVEL OF THE SUPPLY CURVE

The level of the supply curve may rise or fall from time to time, just as level of the demand curve will be affected by things that cause it to rise or fall. In agriculture, changes in yield from year to year, due solely to variations in weather conditions, are one major factor in causing fluctuations in the supply curve, as a result of which it is much easier to determine when measured in terms of acreage instead of production. Supply curves may also vary from year to year because of changes in the price of competing commodities. In the U. S. for example when we tried to explain why the acreage of flaxseed changed, we could not explain it in terms of flaxseed prices by themselves. The acreage of flaxseed is very small when compared to that of wheat. If we took the ratio of flaxseed prices to wheat prices, then we had a high correlations with subsequent changes in acreage. When flaxseed is more profitable than wheat then flaxseed acreage increases. You must bring into your analysis of supply not only price and the subsequent changes in production, but also you may need to consider the prices of other competing products in order to get satisfactory results.

ACTUAL PRODUCTION OR CHANGE IN PRODUCTION

In most of our studies of the response of supply to price, we find that if you relate the per cent change in acreage from one year to another with the price the preceding year, you will find a much more consistent relationship than if you relate the absolute acreage. Farmers apparently increase their acreage from where they are. A high price will stimulate as large a percentage increase in acreage from a low acreage as from a high acreage. The percentage changes from one year to another seem to reflect the way farmers actually respond to price stimuli more closely than the total acreage involved.

IV Inter Commodity Relations

Inter Commodity Relations, relations between one commodity and another, may be studied in a number of different ways. One of the simplest ways is to take the ratio of the price of one product to the price of another product, perhaps for each year or on an average of each five year period, and then see if there is any trend in that ratio. For example under conditions here in the Far East, it will be very important in planning production of wheat or production of rice, to study the ratio of wheat prices to rice prices. You can compute the average ratio of wheat prices to rice prices for the last five years, from 1920 to 1925, 1925 to 1930, 1930 to 1935, 1935 to 1940, etc. Then see if there is any noticeable long term trend in that ratio. Then second, how does the present ratio, or the ratio over the recent years, compare with the long term ratio or its trend? Next, how has that ratio been shifting over recent years? I think you will find for example in the case of the ratio of rice to wheat prices, that the price of rice has been exceptionally high since the war compared to its usual relation to the price of wheat, but in the last two years it may not have been quite so high as it was right after the war. In other words the price of rice had gotten out of line with the price of wheat, but may be tending to come back gradually. Of course it is difficult to measure that in terms of markets where you don't have good data. In studying price ratios of that sort, you should study them both in world markets and in the national market in your country, if you can get adequate price data for your own country, and also for markets in which your country expects to export crops. One useful point in using price ratios, is that you don't need to bother so much about deflating to remove the affects of changes in the general price level. When you divide one price by another price, they are both presumably affected by the same general conditions, and it takes out the changes in price level automatically. Other price ratios, which might be useful to examine, if you are concerned with those commodities as production alternatives, are the ratio of cotton prices to wheat prices, or the ratio of cotton prices to jute prices.

USE OF SUPPLY RATIOS

Similarly you can study ratios of the production of one product to the production of another product. If you have been studying this relation of rice price to wheat prices or to other grain prices, it might be useful also to compute the ratio of the production of wheat to the production of rice. That ratio could be computed for your own country, or for Asia as a whole, or for the world as a whole. The trends in those ratios can also be examined. If you have both the price ratio between two products and the production ratio between them, you can compare the trends in both of them, to see whether the trend in one is related to the trend in the other. You can also consider whether those trends are likely to persist, or whether they are due to temporary factors, such as the very short production and the high price for rice since World War II. It may also reflect the increased population here in the Far East, and thus be due to a rise in demand here. You could make a statistical study of the comparison in the two ratios, by correlating

ratio of rice prices to wheat prices with the ratio of rice production to wheat production, to see how far the changes in one are explained by the other, and how far there is a tendency to an apparent shift in the relation of the two. Ratios can also be used to study competing products in the market, such as the ratios of cotton production to silk production, or cotton production to rayon production, or jute production to paper production. These may throw light on the way in which the use of one commodity is shifting as a result of the introduction of another. Again you might compare that ratio with corresponding price ratios.

In the case of cotton and rayon, the increase in the proportion of rayon consumed in the world compared to the proportion of cotton is very highly related to the lower price at which rayon now sells, compared to the price of cotton. When rayon was first brought out, it was sold at something like a dollar a pound in the U.S., later 50 cents a pound, when cotton was selling say at 20 cents a pound. To-day, pound for pound, rayon sells for less than cotton, so the great increase in consumption of rayon is partly in response to the lower price. If, however, you might find in some other product as in the case of nylon where ordinarily nylon is much more expensive than silk, still because of its superior wearing quality, nylon is being used more and more, even without a lower price.

USES OF COMMODITY RATIOS

These ratios give you some tools of analysis, tools for studying long-term trends, which do not involve a great deal of statistical work. It does not take much effort to get two series of prices, divide one by the other, chart the result, and see what kind of trend it shows. Neither is it much work to compute production ratios and study them, but the knowledge gained may be very significant.

V Price Variations in Space and in Marketing Stages

Prices vary for the same commodity at different points in a country. The relation of wholesale price of wheat at Karachi to the wholesale price at Lahore is one example, the relation of prices of wheat as paid to farmers in the Punjab to the prices of wheat as sold at wholesale at Lahore is another, and the relation of the wholesale price of wheat to the price as sold at retail in Lahore is a third. Each one of those is a different price. In studying prices you may investigate prices at different places, or at different points in the marketing structure, to see how that price relationship has changed from time to time. The price to use if we are considering the demand curve will be different from that to use if we are considering producers' response to price. Producers' respond to the price that they receive, so the most accurate way is to relate the average prices received by farmers to subsequent changes in production or acreage. On the other hand if we are studying the effect of price on consumption, then the appropriate price to use is the price that is paid by the consumer. In the case of cotton this might be the

wholesale price paid by the cotton mill, or in the case of wheat, the retail price of wheat or flour as paid by consumers. Then when we try to compare the supply curve with the demand curve, to get an idea of the long term equilibrium price, we have to make allowance for the fact that the two prices are not the same. We have to adjust the farmers' price by adding the normal marketing margin between the price the farmer receives and the price the consumers pay. We have to study that margin and changes in it, in order to make the right allowances for it.

VI Consumer Habits as Related to Prospective Demand

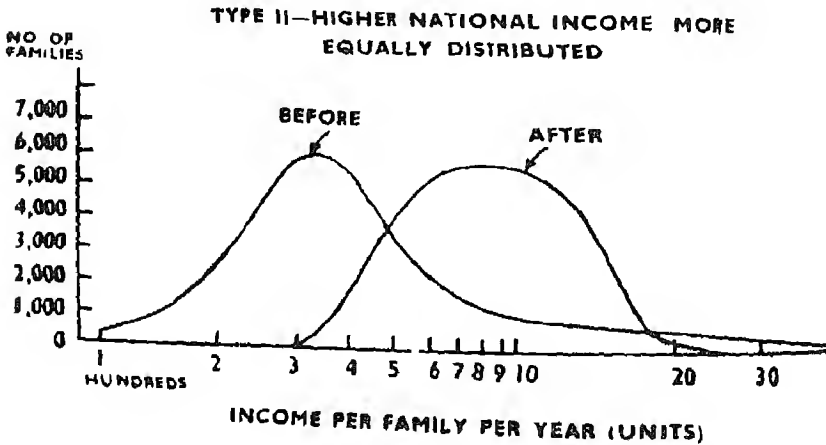
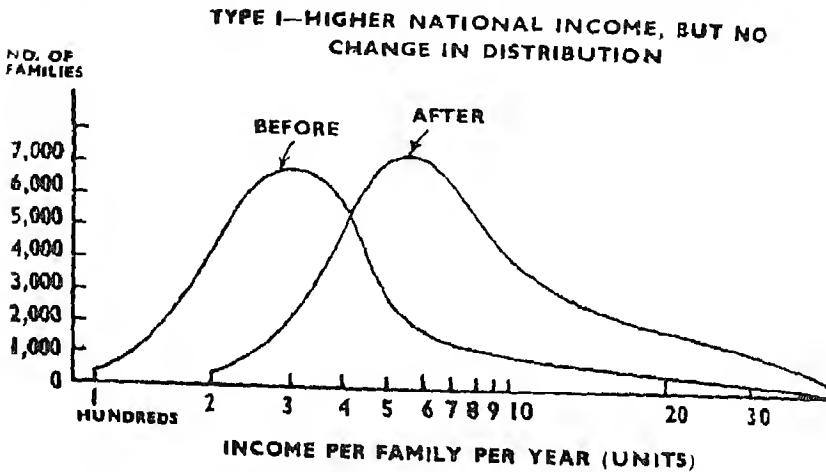
The amounts of different products consumers buy and consume varies from group to group within a society, according to the income which each group receives. More well-to-do groups, spend relatively less of their income for food and more of it for housing, than do poorer groups. Still more prosperous groups in the community spend a still smaller proportion for food or housing, and a higher proportion for travel, for education, for automobiles and other semi-luxuries or luxuries. That is probably true in all countries. By studying the differences in consumption between groups in one country, or by studying the differences in levels of consumption from country to country (as illustrated earlier) you can get some indication of the probable changes in demands for different goods with future changes in national income.

If data are available in your country, or you can get by survey or otherwise some idea of consumption at different levels of income, you can analyse those data to see how far the quantities consumed vary according to the income the group receives. And then knowing that you have a national development plan which calls for an increase of 15 or 25% in average income *per capita* in a given period, you can then estimate how much that increase in income is likely to expand the demands for particular products in your economy, and take that into account in estimating the market for those products. Even if you can't make such studies for your own country if your country is a producer of products for export to other countries, it may be important to you to make some estimates as to what the future demand may be in those countries. You may be able to get those estimates from publications or studies made in those countries themselves, or you may investigate from their own data the question of what is likely to happen to demand for your product as their population grows and their national income rises. The higher income people spend more for food than the lower income people, but spend a smaller per cent of their total income. The proportion of food expenditures for livestock products and fruit and vegetables also increases with rising incomes. Studies in other countries show that in general, the expenditure for clothing increases rapidly at first with rising incomes, then more slowly, while that for automobiles and things like that rises continuously. And finally there is another item, for saving which in the lower income group is nothing at all, but rises very rapidly with higher incomes, and at an increasing rate.

EFFECTS OF CHANGES IN AMOUNT AND DISTRIBUTION OF INCOME

You can get economic change in two ways (r) suppose the national income increases, but the increases are spread proportionately to the whole population, the effect can be to raise the demand for various products, but will raise them at much the same rate. If you increase the income *per capita* by 50% in the country as a whole, that means that some people who were in the lower group have now shifted upto the next group, some of those who were previously in the middle group were shifted up, so that there may be a smaller proportion of the very poorest and some higher proportions in the upper income groups and you have to make allowances for that. But if income is more equally distributed, then you actually change the form of the income distribution

FIG. 3. TWO TYPES OF CHANGES IN INCOME DISTRIBUTION



If social measures have been introduced to create a more equal distribution of income, as for example a heavy income-tax has been put on higher-bracket income and heavy taxes are put on business profits and at the same time old age pensions and unemployment benefits are much raised which increase the income of low income groups, then the distribution of income will be quite different. The average income in the lower group will be higher and there will be more of them in middle-income groups, and so you will get more people in the middle. Then you tax the upper income groups so there will be fewer in the upper income groups and the maximum income will be much lower so that the new curve of income distribution (Fig. 3) will be quite a different curve, more concentrated in the middle.

The effects on consumption would be very greatly different in the first case and in the second. We will call them I and II (see Figure 3). With an increase in national income but no change in its distribution (case I) there is likely to be only a little shift in the pattern of consumption. The tendency would be to raise the demand for most products to the same extent, although for the basic necessities used mostly by the poor groups, the increase might not be quite as high. In the second case, however, there will be a sharp difference in the result, because a substantial number of families would have been shifted from the very low income groups to the moderately better off groups. At the same time a substantial number of families, that were formerly very well-to-do, would be shifted back to lower incomes. In this case you would get a much larger concentration of the increased demand on demand for articles of every-day use. The demand for food for example will increase very much more in the second case than in the first case. A large proportion of lower bracket incomes are spent for food and so by adding a million dollars income to the income of the poor, much more of that would be spent for food than if the million dollars were added to the income of very well-to-do people who already buy as much food as they want. Similarly with the demand for cotton and wool, the effect will be much greater in the second case than in the first. For meat, on the contrary, you might have a reduction in the demand (in very low-income countries) at the same time you had an increase in demand for articles of common necessity such as grain and clothing.

Question—What would the effect be for products such as medicines?
Answer—It depends on the country. In countries such as the U. S. the amount spent for medicine and doctors is almost nil for very poor people, it goes up quite rapidly as income rises and then goes up still further for very high income groups. In countries that are so poor though that expenditure for medical services are very low, both for the poorest people and for those in the next group above them (as I suspect it is true in this part of the world), a change of type I might have little effect on demand, while you might get very great increase for the demand in medical services by a moderate change in income distribution (Type II).

SIGNIFICANCE OF INCOME CHANGES IN FORECASTING DEMAND

These points are quite important not only in trying to make statistical forecasts for the future, but in trying to understand the impact of changes

in income and its distribution in your own country and others, on the prospective demands for particular products. Many people have been astonished at the enormous demand during the post-war period for cotton, wheat, and wool. Measures that have been adopted throughout the world, in the capitalist countries as well as communist ones, have tended to create much more equal distribution of income in many countries than before the war. Many countries have adopted income taxes steeply progressive on upper incomes, social security measures such as old age and unemployment payments, and measures to support and increase the incomes of their farmers, traditionally a very low-income group. More equal distribution of income means that many people who did not have enough clothes to cover themselves can now buy more clothing and bedlinen. As a result throughout the world the demand for wool and the demand for cotton, have been very much larger *per capita* than they were pre-war. Effects of the shift in income has been more marked on textiles than on foods, but it may also have something to do with the fact that although food consumption for the world as a whole is to day as about as large as pre-war, food prices are relatively higher than they were pre-war.

You can study this phase of the economic problem on the one hand for your country, to see how far the present and the prospective changes, both in the average amount of income *per capita* and the total amount of national income and in its distribution among the population, are likely to affect the relative demands for different products. And you can study how far the same type of changes in other countries, especially in countries which import products you export, are likely to affect demand for those products.

Question—Does the change affect the number of wealthy persons?

Answer—Yes, in many countries low incomes have been raised while very high incomes have been reduced. In the U K and U S, in every city, there were many magnificent houses and many magnificent estates in the country, which required a staff of anywhere from 5 to 25 servants to maintain them properly. To-day estates or houses of that sort, either in town or in city are known as "White Elephants". As a result of income taxes and other taxes, no one can afford to spend as much on servants in these countries as they used to spend. Not only that but servants cost more. As the lower income are raised, there are not so many people who are willing to work as servants for very low pay, because they are able to get better jobs. You have a double effect, the cost of the servants is much higher and the income from which they can be paid is much lower. So in both of these countries, the large estates are being sold, or they are being converted into apartment houses, or they are being torn down. In England some of these estates have been turned over to the Government to be treated as public property and held as national museums. Throughout much of the World we are getting a more egalitarian society. The situation in the U S has gone so far that if a professional woman, a housewife wants to do outside work, half or three quarters of the pay that she receives is likely to be used up to pay the servant she has hired in place of her in the home. Particularly no one, except a person with a very high income, say \$10,000 a year or higher, can afford to hire one full time servant in their house.

VII Use of Price Analysis in Development Planning

Both studies of changes in price and changes in demand, help in appraising long term projects for a development project. With the exception of a few projects, such as better marketing facilities as proposed by Mr. Easter, most development projects, particularly those involving agriculture, take a long period of time before they could begin to pay off. Even the Thal project will take five years before it is anywhere near full production, and then probably 25 years after that, before it will be well on its way to pay itself off. Periods 5 to 25 or 50 years ahead are pretty far over the horizon in judging what we may expect economic conditions to be. There are basically two different ways in which analysis and study of Supply Demand Relations can help in making such forecasts for the future.

ARE PRESENT CONDITIONS REPRESENTATIVE ?

First, they may help you to judge whether the existing conditions can be expected to prevail in the future. You will recall that Dr. Khambhu said the only thing to do was to use the present price for the future, because you do not want to start an argument. But when you take the present price to represent the future, that is a forecast as much as if you take any other price. You can't necessarily expect the prices in the future to be the same as they are to-day. If we know from objective evidence that the prices to-day are either usually high or unusually low for a particular product, we don't want to take that as the best guess for the future. Study of the supply-demand relationship and the trend of price and trend of production and demand can give you a definite basis of judging whether the existing commodity situation of a particular commodity is one that can be expected to prevail even in the immediately future years, or whether it is likely to change in one or the other direction. We have in 1950 two good illustrations of it. Cotton prices shot up very abnormally, and we know that that is due to the fact that a rather sharp acreage reduction in the U. S. this year was accompanied by an exceedingly low yield, so there was a very short crop. We also know already that the U. S. has announced that there will be no production control in 1951. There will probably be quite a sharp rise in acreage next year merely from the normal response of cotton acreage to cotton price. Further, when the U. S. does control cotton production, the amount that each farmer is permitted to produce is based on his past record of production. When cotton control will be re-imposed, there will be strong pressure to include the acreage in these free years in the future production basis. Farmers may, therefore, expand production more than we would expect from the normal relation of price to production, in order to make sure that they have a big acreage allotment on their farms, when production control is again reimposed. For both reasons, there is likely to be a sharp increase in production. Further the trend of yields shows that such a low yield as this year does not occur very often. Similarly with rice. Present rice prices may not be a safe guide to the future rice prices. The ratio of rice prices to wheat prices has been abnormally high since the war. As I

suggested before, the ratio may not have been quite as high for the last year or two as it was in the first year or two after the war. If that is so, there is already a tendency for the abnormally high rice wheat ratio to decline as rice production increases. The countries that are making national plans on the basis of material increases in rice production either for internal consumption or for export will need to give very careful study to the prices, and consider how soon it may be before rice is not quite so high in prices as it has been. But this is all on the side of judging from price analysis study, how far the conditions of the current year, or most recent year or years are likely to prevail in the future.

WHAT ARE THE UNDERLYING TRENDS ?

The second basis for judgment involves considering what the long term trends of price, of supply, and of demand are likely to be. You can measure those trends, either by the trends in the position of the demand curve or the supply curve in a price analysis study of the sort that we have outlined, or you may judge them somewhat less exactly from trend lines fitted to production figures and consumption figures, particularly if you look at the trend of prices at the same time. This gives some indication whether there is an upward trend in production on the one side or consumption on the other, particularly if you examine the trend of carryover to see if consumption is keeping up with production. The actual trends as well as the calculated positions of the supply and the demand curve, if you can measure them, are all elements you can take into account in trying to get the best judgment of the direction in which the commodity situation has been changing over the long pull.

Also, you can analyse the trends of buying power in different countries. In the United States, for example, the real buying power of the national income has trended upward very sharply, with its amount doubling just about once in every twenty years. This rapid upward trend in real U. S. national income is apparently still continuing, which is a very important fact in making long-range estimates of total world import demand for many products. Similar studies of the trends of buying power and of imports in some of the principal markets for your products may help you in making long-term judgments of future demands.

VII Material on Long-term Economic Forecasts

GENERAL PRICE LEVELS

Some published material on long-term economic forecasts is available in printed form. Forecasts of the general price level in the U. S. A. are given in the document—

“Proposed Practices for Economic Analysis of River Basin Projects”, report to the Federal Inter-agency River Basin Committee, Washington,

May, 1950 Its forecast of price levels 5 to 15 years ahead is as follows.—

"The Department of Agriculture has made projections of future levels of prices for the principal groups of agricultural products, including timber, for specific crops, and for the principal agricultural cost items. These projections for the 1955—65 period give a level of 150 (1910—14=100) for prices received by farmers, and 175 (1910—14=100) for prices paid by farmers for production cost items including interest and taxes. These represent reductions of 40 per cent and 30 per cent, respectively, below the 1949 averages.

In making these estimates, probable trends in domestic and foreign requirements as well as price—support programmes were taken into account and integrated within the framework of the general economic projections" (For more details and for long-term individual crop price projections, see U. S. Department of Agriculture, Long Range Agricultural Policy, 1948)

These long-range projections were prepared as a basis for appraising possible future benefits in watershed treatment programmes. Since they were prepared the Korean War and the greatly increased armament programme have greatly altered the immediate economic prospects, and resulted in increasing price levels rather than declining. Whether that would be sufficient to change these 5 to 15 year forecasts is a matter of doubt, though it certainly might modify the earlier years of the period at least.

One thing to do is to watch for publications of that sort and use them where you can.

GENERAL ECONOMIC AND BUSINESS CONDITIONS

A second guide to forecasting the future are the forecasts of the general economic situation, which are prepared both by individual governments and by some international organizations. Among these individual government forecasts, the most important are the ones prepared annually by the U. K. and the U. S. The annual U. K. Economic Survey gives their programme for the next year with a pretty clear picture of what is expected in terms of national income, investment, production and consumption with some comment on prospective price levels and foreign trade.

A similar publication, or somewhat less elaborate, is put out periodically in Canada with forecasts of investment, with some indication of the prospective effect on the general situation. In the U. S. there is a quarterly report by the Council of Economic Advisors, and twice a year an Economic Report of the President published every July and January. This contains a summary of the general economic situation and some indication of the immediate prospects. The U. S. Department of Agriculture, in its annual Agricultural Outlook Report published each fall, also includes a one to two year forecast of general economic situations both in the U. S. and the world as a whole. Australia also has annual national budget statements for the whole economy. These are all rather short-term forecasts and most of them go only a year or at the most two years ahead, so they have only general bearing on prospective long-time developments.

METHODS OF ECONOMIC FORECASTING

In F. A. O.'s general economic statement last year, *Current Outlook for world demand and Prices of Farm Products—1949*, was included an attempt at a longer-time appraisal of the demand in the world as a whole. We did not repeat that this year, because long-term plans do not change very rapidly. In that statement, we brought together the long-term development plans of all countries. We added up those national goals for national production and national income, summarized them both in a world total and in regional-totals. In other words, this made a projection of the possible increase in national income and world income over the next two or three years, if all existing national plans were successfully carried out. The forecasted rate of growth in world demand in the industrialized regions—5½% per year—probably represents the maximum likely rate of upward trend, excluding war-like conditions.

COMMODITY APPRAISALS AND COMMODITY FORECASTS

In this field F. A. O. appraises the whole situation for each commodity from time to time, and issues commodity reports and also commodity bulletins giving shorter appraisals of commodity situations. These in general are rather short-time appraisals, but they are useful in studying the current situation for commodities such as cotton, wheat, jute, oil seeds. These can be obtained from the appropriate authority in your country, or direct from the FAO Regional Office at Bangkok, or the FAO World headquarters at Rome. These reports are sent to the FAO Committee in each government and if you find who is the Secretary of your National FAO Committee, he is the person to ask first.

FAO GENERAL AND COMMODITY OUTLOOK STATEMENTS

In addition, FAO prepares annually appraisals of the general economic conditions ahead and of the economic outlook for each major commodity including farm, forestry, and fisheries products. (See FAO publication called "Food and Agricultural Programmes—1950-51" FAO document 49/28/3, November 1949). Agricultural programmes submitted annually by all the member nations direct to FAO are then analysed and discussed regionally in annual regional conferences. They are then brought together in this report giving the prospective world situation, region by region and for the world as a whole.

FAO itself cannot of course make Agricultural programmes for those nations. It is trying to help the nations of the world to prepare their own programmes providing technical assistance where requested for that purpose, and trying to obtain from them accurate and up-to-date information on the plans and programmes. These include proposed changes in acreage, in production and in exports and imports. Summarizing those reports and plans gives information, so that each country can make its own plans and plan its development projects, in the light of what other nations are planning to do. Anyone appraising economic development projects, should make sure they have these reports as one basis for their future calculations. FAO

is now working on a similar document for two or three years ahead, but we can only go as far ahead as nations are prepared to look ahead in their own programmes. Another source of information on the prospective future are the annual Agricultural Outlook publications of the U S Department of Agriculture. These appraise (from the point of view of the U S of course) the general economic situation, the prospective development over the next year or two and the prospective development in each major and minor farm commodity. Since so many of the commodities of the U S are exported or imported, that includes quite a review of economic conditions and prospects around the world for products such as cotton, wheat, wool, tobacco, rice and citrus and dried fruit, which are affected by the international situation. The information is published as a series of mimeographed reports on each commodity so you have to ask for the several reports on the agricultural outlook. There is also a printed U S Department of Agriculture report called "Agricultural Outlook Charts", the latest of which is the 1950 edition. It gives a large number of key charts for the general economic situation and for individual commodities, together with the data from which the charts are drawn. This provides a lot of key economic data, already organised for easy economic appraisal. For copies of those U S publications I suggest that you ask the Agricultural Attache in the American Embassy in your own country, to get copies for you and to keep you supplied each year. Finally we have the agricultural outlook work of FAO. Last year as I mentioned before we issued two documents, one called "The World Outlook for Individual Commodities" and the other "The Current Outlook for Demand and Prices of Farm Products—1949". This year both of those appraisals, together with a review of the general economic situation in agriculture, have been put into a single FAO document, "World Outlook and the State of Food and Agriculture—1950". These documents include a statement of the general economic conditions, an appraisal of the prospective economic conditions on world basis and by regions as far ahead as we can push it in the light of the current information we have, and an interpretation, commodity by commodity, of the significance of the world economic outlook for each individual commodity.

Forecasts of this sort are only forecasts, and can never be perfect. In 1948 the U S industrial production and the general wholesale price level had been rising quite rapidly. But by the end of 1948 they began to turn down and from the end of 1948 till the middle of 1949, declined rather rapidly. Our 1949 Outlook Report was written in the summer of 1949, and it anticipated a continued gradual decline in the U S at a rate sufficient to reduce the total national income in the U S for the 1949/50 and for 1950/51 year by 10 to 15% or more below the 1948 record level. At the time these statements were prepared conditions were dropping very rapidly and if they had continued dropping at the same rate they would have been way below the forecasted level. Instead of continuing down, however, they turned up and after the middle of 1950, due to the Korean situation and the subsequent rearmament drive, went up very rapidly. So in that case the forecast was wrong. It said the level of the things in demand was going to go a little lower, but instead it started to go higher. This should warn you when you read such reports, they are not necessarily what is going to happen,

they are simply the best judgment that the group working on it was able to make at time they were written but they are not necessarily right

The FAO 1949 commodity outlook statements, however, mostly proved to be somewhat more accurate in their forecasts. Comparing the commodity forecasts issued in the 1949 report with the actual developments in 1949 (as reported in the 1950 report, it appears that the general changes in the world commodity and price situations were correctly forecasted for foodgrains, wool, coffee and meats and were nearly right for fats and oils. In some other commodities, however, the sharp change in general economic conditions made the actual demand and prices substantially higher than had been anticipated. In cotton, where yields were unexpectedly low, the effect was even more intensified.

In the 1950 FAO outlook report detailed analyses are available for all the major farm products, foods and textiles, including tea, cotton, rubber, cocoa, hard fibres and jute. There are also forecasts for softwood timber, wood pulp and newsprint, and fisheries products.

CONCLUSION

Except for the appraisal of long-term demand, most of these analyses, although they push forward further than that which is available from any other source on a world basis, still go forward only a year or two years, except perhaps for products such as coffee and wool which give the basis for a little longer forecast. But in development programmes we need to judge what the commodity situations and demand and price conditions are likely to be at the time the projects come into production from 5 to 25 years ahead. No one has ever really attempted to appraise that far ahead.

All you can do in your country is to say here is what is known. You should not make assumptions contrary to the known facts. Find out how the price situations in your own country are related to international markets and study the long-time world trends. That will help you to say something about which way the prices are likely to change. Beyond that it is up to you as to how much more light you can throw on it. Later on, it may be possible for the U N as well as the F A O and other international agencies to do some work on long-time trends, as a basis for appraising some of the long-time problems we have been discussing.

Of course in many cases you don't have to know exactly what particular product a new region will produce. The Thal Valley will produce wheat or cotton or citrus fruit, and you can shift as you go along if you find that you made mistakes. But cotton will earn much more income per acre than wheat will. Still more intensive products, citrus fruit for example under conditions of good demand, can produce much more income per acre, if the internal demand is sufficient to absorb the production.

The final point is the question on which Dr Khambu and I differed in our lectures. "To forecast or not to forecast, is there a question?" My answer to that is there is no question. The future is always more or less unknown. Any plan has to related to things that have not yet happened.

We cannot change the past nor the present. The only thing our acts can influence is the future. The steps we take themselves influence what the future will be. Whenever we calculate this is what costs will be, this is what returns will be, we are forecasting. We are making a forecast if we say the prices 10 years from now will be the same as they are to-day, just as much as if we say they are likely to be a lower or higher than they are to-day. You cannot avoid forecasting in the business of helping to make economic plans or projects. The only question is how to make the forecasts on as sound a basis as possible so that you come as near as possible to estimating correctly what the future will be.

PART IV
ORGANIZATION AND ADMINISTRATION
BY
DR. MARION CLAWSON

ORGANIZATION AND ADMINISTRATION

I Purpose of this Course

The purpose of this course is to consider how to get a job done. The job may be the building of an irrigation project, introduction of a farm or agricultural practice, or the installation of a hydro electric plant. I shall use the term 'job', frequently in a very broad and inclusive sense. I am not concerned much what that job is, because that presumably comes out of your other planning work. But having given a set of plans, how do you translate these plans into results? That is a broad subject and I am sure I cannot cover the whole of it in detail but I hope to discuss the more important matters.

II Importance of Administration

Now to my way of thinking, translating plans into results is fully as important as the planning. I would not say that it is more important, but I would say it is as important as the plan. I think it is relatively of little use to develop plans, however sound they may be, if the subsequent action either completely ignores the plan, as it sometimes does, or if it does not follow it properly and adequately. Poor implementation of a good plan may be just as serious as a bad plan. The various countries of the world, and I suspect the under developed countries more than the more industrialised countries, are littered with the wrecks of good plans that never got translated into action. In many instances, plans are drawn up, which may or may not have been sound. They have been more ambitious than a country could carry out, or may have been well adapted to its conditions or may not, but if they did not get carried out any expenditure of resources made was wasted.

I can give you an illustration in one of the European countries where I stopped at on my way here from Washington. The ECA had quite a large programme. ECA had approved a large number of projects from counterpart funds for the first year of operation.

That country in the first 16 months had only been able to use 10% of the funds set up for the first year. They showed me charts of the course that a project had to follow from its initiation until actual commencement of operation in the field.

Plans were reviewed by many different officials. The process took so much time that very little of what was planned was translated into effect.

In my judgment it is probably more desirable to undertake a relatively small project on resource development, and carry it through successfully, than it is to undertake a much larger one and fail completely to achieve the objective, either in time or in important result. As I read Dr Singer's earlier lectures and heard the latter ones, I thought they might be paraphrased by saying that there is no royal road to economic development. Well, I would say the same thing is true with administration. There is no royal road to carry things, out, simply, directly, and without a lot of hard work.

III Aims of Administration

I would point out here that the first aim of administration ought to be to get the job done, however that job has been laid down to you or to an administrative group to do. That sounds so simple but actually in a great many instances the job is not done at all or it is done very slowly. In the U S Government where I have been a worker for many years, one of the terms that we have to describe a man is to say he is a good operator—or he is a 'poor operator'. That is a sort of a slang phrase that means he does not do what he is assigned to do. In my experience administrative work required intelligence, good judgment, high integrity and other such human qualities, just as much as does good planning work. In addition perhaps it requires a certain amount of perseverance and keeping your eye on the ball. Many people in the research and planning field can and do turn out a great deal of excellent work without a good sense of planning or organization. In administration, it is perhaps better to do a possibly mediocre job but carry it through steadily and without being erratic about it than it is to do a more brilliant job and provide some brilliant failures. That may be a judgment as to attitudes which is not entirely accurate.

Next to getting the job done at all the administrative aim ought to be to get it done as quickly and as efficiently, with as small an expenditure of manpower and funds, as possible. I do not mean that administration should be skimped. Dr Singer pointed out that many projects have had inadequate planning. I suspect in a good many instances inadequate funds are available for proper administration. But at the same time the objective of the administrator ought to be to carry out whatever he has been given to do with the minimum of manpower and minimum of resources. The job may be only a relatively simple one. For instance it may have been nothing more glamorous than quickly getting your letters answered. Merely to get letters answered quickly with the minimum of manpower is an administrative job which may be important. I previously mentioned the case where the job was to get the project approved by the Government. It went to so many different departments and to so many different people that it was six months before the project was approved. Unless you could show very good reasons, that would seem an unreasonable period for projects which had already been considered rather fully.

IV Administration and National Culture

I feel that the administrative organization to get any job, whether large or small, is peculiarly related to the culture and to the tradition of a particular nation. In the first place in administration there is frequently more than one way to do a job with perhaps equal efficiency, or nearly equal efficiency. There is little administrative work in which there is a single test or a single answer that is outstanding above the others. There is usually more than one way to get a job done, and which alternative you adopt may depend a great deal upon conditions in your particular country. I am repeatedly going to tell you about things in the United States, not with the idea that that is superior but because that is what I know. But I am going to reiterate, probably many times during this course, that there is more than one way

to do some of these things. You have got to work out in your country under prevalent conditions, general attitudes, what you think is likely to be the most successful way. I suspect that is true of a great many of the problems connected with resource development, but I think it is more true of the administrative aspects than of the other parts. The types of economic and financial analysis which the other lectures have laid out for you, are fairly well applicable under a variety of conditions. Dr. Singer pointed out the considerations of a capital-poor country are often different from the considerations of a capital-rich country, and yet it is possible for an outsider to appraise those factors much more accurately, than it is in some of these administrative aspects. Certain things have come into existence, have history behind them, and are more generally acceptable than others.

In the United States for instance, we have two aspects of our Federal Government which are in general not found elsewhere—at least, not to the same extent, which certainly greatly affect our administration. One of them is the division of powers between executive and the legislative branches. In a country which has a Parliamentary system, where your Prime Minister is the chief executive officer, and he decides on a course of action, you can be fairly sure that it will be carried out. In the United States that is not true. There is often a difference between what our executive branch will propose and what our legislative branch will accept. Time and again the executive branches or departments decide to do something, which has the approval of the President, which is presented as part of the President's programme, but it does not receive the final approval from Congress. That is one of our particular problems from which I hope most of you are free. Mark you, you may have other problems of equally serious character. It gives to our work a character that is not found in any other country and which is often very difficult for people of other countries to understand. Under this division of power, the executive branch can ask for appropriations but the legislative branch has the final decision. On the other hand the legislative branch can pass laws and require the executive branch to do certain things. There is much historical background to this arrangement and it is part of all American political structure, its culture, its economy.

Likewise we have in the United States a Federal system. By that I mean that the States preceded the Federal Government and the States have many powers which the Federal Government does not have. I realise that in most countries where you have provinces, you have something akin to that but the exact nature of the problem is different. I bring these up only as illustrations of the sort of thing that may exist in some countries but not in others and that may dominate the kind of administration and form of organisation.

In this course I am going to present certain problems which I think any administrator or administration organisation will face. In any country under almost any political system. I will try to put those in fairly broad terms. I will give some examples, drawn very largely from the United States. It is the experience which I know. If I knew the situations in the countries which are represented here, I would be much better able to draw the examples from these countries. I do not and it is the sort of thing which you cannot very well find from literature, it is the sort of thing that you have to know pretty much from actual experience from the country. The

questions that are raised you will have to figure out, pretty largely, for your own country. As Dr Ezekiel brought out yesterday afternoon, the project statement that you are going to prepare should contain some consideration of the administrative aspect. I think there is a strong feeling on the part of many lending agencies that administration or execution of plans is one of the weak links. Many financial agencies will want to know what arrangements have been made or are contemplated for actually carrying out the plans that are submitted

V Transition from Planning to Administration

The first big problem of administration of any resource development project or industrial development project, is the transition from planning to administration. In many cases, planning work is done by one group of people and administration by another group. That may be true even though it is in the same department or same agency, whether it is the bureau, or whatever you call it. You may have a group of planning specialists and you may have a group of people who carry the plan out. That is a very natural situation because the kind of skills and knowledge required in planning are different, than are called for in administration.

It may be true even within an engineering staff. It may have a group of engineers who are concerned with project development and another group of construction engineers. It is likely to be even more true of economic planning projects. The economists and others who do the economic planning are unlikely to be the same people who do the administration. On the other hand it may be that this situation does not arise or at least not to the same extent.

A plan sometimes enters a very critical stage, when it is time for it to be carried out. It is a little bit like a baby chick chipping its shell, getting out of the egg-hatched, awfully weak and in a vulnerable condition. It is, at least to my experience, one of the most critical stages in the history of any resource development project. If there had been on the planning staff some individual who had known from the beginning that he was going to have a share in the actual execution of the project, or if after the project was approved, some of the people who had been concerned with the planning, were transferred over to the administrative unit, so that you have actual intermingling of personnel, then some of this may not exist or may not exist to the same extent.

BRIDGING THE GAP

Now, supposing that there has been a specialised planning staff and a specialised administrative staff, what things can you do to bridge this gap?

In the first place, assuming that you are the planning agent, if during the course of your planning you knew that the administration the construction was going to be carried out by some other agency, one of the things

that you might very well spend a little time on is getting personally well acquainted with the people in the construction agency, and discussing with them during the course of your planning some of the problems you are running into, some of the suggested solutions, some of the plans that you are working up. That, of course, assumes you know who is going to be in the construction agency. After the plans are turned over to a specialised construction agency or administrative agency it might be possible to hold a good many conferences which would help the carrying out of the plan. The actual transfer of individuals from one type of work into the other kind should help. Planning and administrative work are under the same general direction, for instance, if they are in the same Ministry but in different bureaux, or if they are in the same bureaux but in different divisions. Under those circumstances, an administrative officer, common to both, can do a great deal to ensure the carrying out of the plans. He can go a long way in arranging meetings and mutual discussions. Certainly in the United States, there has been a tendency to have planning in one part and administration in another part. It is rather a natural development because each calls for different kinds of training and different kinds of skill.

Generally it is not a good arrangement to have the planning staff completely separated from the administrative staff.

That is often a serious error. For instance, if you had an irrigation department, you might have a group of engineers planning projects and another group of construction engineers. If you have a common head, at a not too distant point in the administrative line and if he takes the proper steps, you can go a long way to reduce the hazards of separate planning and administration. Under those circumstances the degree of separation is not harmful and may have some advantage.

A completely specialised planning staff and a completely specialised administrative staff is likely to be even more of a problem in some of the more intangible developments where your purpose is to add to the skill and knowledge of your people in the agricultural field. If you have your agricultural experiment stations and your agricultural extension staff so widely separated that there is no interchange of ideas between them, that is most unfortunate and bad organisation.

PUBLIC RELATIONS

Have the plans been made known to the general public and does the latter support them, or must the administrator cope with an unformed or possibly indifferent or even hostile public? I think that is a particularly important matter, especially for relatively new programmes of resource development. In any country, if you try to carry out programmes which do not have public support, a public knowledge, you are in for, as we say, a tough time. Because you are going to be encountering opposition or hostility or indifference or resistances at all stages. I was quite interested the other afternoon, in the discussion of drainage problems, to have some one say that one of the reasons for putting down drainage wells near the villages as well as near the canals was because the farmers could see some advantage

from it. In the long run a programme might not be any more advantageous but if it has tangible results which the public can see it will have more public support. In any country, and in particular in a country with democratic institutions, your resource development programme is going to be governed or limited to a very considerable extent by the degree of popular understanding. For some things, such as an irrigation project which brings new land under cultivation, there will generally be considerable support. That is something which most farmers can understand and is going to bring general benefit without too much question. Even, then, it may involve, for instance, building a canal which will deprive some farmers of part of their land or other things which will not necessarily work out to their advantage. If you have a well informed public it is very helpful. If you are talking about projects which represent something less well known, for instance, a health programme, or a crop improvement programme which involves some new way of dealing with an old problem, good public relations are even more important.

Both planning and administrative people have some responsibility in carrying the public along with them. The planning people of course often cannot make public the results of their plans, until those plans have been approved by the appropriate officials. But there are many times when you can inform the public and sometimes actually obtain their assistance in making your plans. When the administrator takes over the execution of some plan, often his very first responsibility is to tell the public of what he proposes to do and how he proposes to do it. There are a great many techniques for doing so, and again, that is something which would have to be adapted to your country. Newspapers or pamphlets might have some advantage, in some situations. Of course they will have no advantage when you were dealing with a largely illiterate group of people.

Radios or public meetings may have some advantages in some situations. Often the practical thing is to work directly with some of the recognised leaders of the people. Then by conversation, they spread the information to people in their community. In addition to the planning people, strictly administrative people of your Central Government or your local government can often do a great deal to build popular understanding and popular support for a resource development programme. Your minister in the government, or your provincial governor, or whoever the official may be, in speeches and in statements to the public can do a lot to build support for a programme. Any administrator who sets out to carry out a programme which is poorly understood by the public is going to have a lot of needless difficulty which a good information programme can help to cure.

DISTINCTION BETWEEN GENERAL AND SPECIFIC PLANS

There is a distinction between general and specific planning. I know from personal experience of some instances where technical people of various kinds have done a great deal of work to develop some plans, but when it comes to carrying those plans out, the administrator says that these plans are inadequate and the planning man has been quite disappointed and

shocked. The kinds of plans that you develop in order to get a project approved are not always the kind of plans that an administrator needs to carry it out. In the planning of a project it may be unnecessary to make a complete analysis. You need to be sure that the plans are sound and yet you do not have in them, in many instances, all of the detail that a construction engineer will need to carry them out. In fact it would be unwise to put such detail in until they are approved, because such detail may not be necessary and the work that will be involved in it might be wasted. For instance, a project although it is a good project and a desirable project may not be a top priority one and so you put it on the shelf, for one year, two years, five years or longer. If you are limited, as you probably will be, in the staff you have for planning work it would be better to make out another plan with the same degree of detail than to have made up that one in complete detail. It is probably unnecessary to put into a general plan some items which must be worked out before you can actually begin construction. For instance, one of the best illustrations is the drilling to explore the foundation for a dam site. An engineer must go through a great deal of work before he decides whether it is possible to build a dam at a given point. You may want geologists and other specialists to examine the site. A lot of work must be done in measuring the reservoir capacity and in estimating the cost of a dam. At the same time it is not generally desirable to do detailed drilling of the dam site. There may be some drilling so that you know the character of the foundation rock on which your dam is going to rest but to know in detail the contour of that underground rock is unnecessary in the stage of general planning. Yet of course, one of the first things that a construction engineer will want to know is the precise contours of that dam site. That is only one illustration of the kind of detail needed to put general plans into operation.

This whole matter of translating plans into results is often a critical stage in the history of many a resource development project, more especially because it often involves a shift from one group of persons to another. Like a great many other aspects of administration which I am going to refer to later personalities play a big part. If you are the head of a planning unit, whether that unit has only one or two people besides yourself or whether it is a big organisation, and you develop some plans which at a later date are going to be carried out by some one else, it is enormously helpful if you know who it is and if he knows you, and there is mutual confidence and mutual respect. If you are both the planner and the administrator, then presumably you have the confidence of yourself.

VI Qualifications of Administrators

In general, technicians or specialists make better administrators than untrained administrators, but not always. Merely because the man has been trained as an engineer or an economist or an M. D. for health work, and if he has specialised in that work for some years, does not insure that he will be a good administrator as a result. After all, the training that he had does give him a grasp of the technical problems but the problems of organising people, organising work, or delegating the responsibility, requiring subordinates to fulfil obligations and co-ordinating one part of his

programme with another, that does not necessarily come out of technical training. I am sure that in the United States we have a number of outstanding administrators with technical background, but we have also had a number of failures with technical background. You can have people without specialised training who turn out to be excellent administrators. They ought to have an appreciation of what a specialised training can do.

A good administrator must be able to use specialists of different skills and experience than his own, and may be able to use them very effectively. And as a matter of fact in a programme of any magnitude you have to do that because you cannot possibly be a specialist in all fields. While on the whole it is desirable that administrators have good technical background, that is not alone sufficient to ensure good administrators. Able people of broad outlook and with the abilities to use the skill of others may be excellent administrators. You must learn to use a lot of skill that you do not yourself possess, and that is often the critical stage in one's development. When his responsibilities begin to outrun his own individual capacity, he must know how to use other people's skill and co-ordinate them with his own.

Part of your job whether you are an administrator or a planner, is to be able to make your work intelligible and interesting to your superior and to enlist his support. One of the problems you have to cope with in any job is your boss. It does not make any difference whether you are a secretary, a clerk, a typist, you still have a problem of adapting your work, of handling your work, of presenting your work to that man up above. No matter what our position is, what our programme is, we are going to have superior officers and part of our job is to carry on our work and our personal relations with them in a way that gets our ideas into their thinking and accepted by them. Again the matter of personalities is very important.

The essence of administration as I see it is always to use your men where their skills and their personal abilities are most effective and where their weaknesses are least harmful. That is because any of us, you or I or anyone else, have certain things at which we are especially good and certain things in which we are probably weak. The secret of good administration is to use your men, select your men, for positions where their skills are most important and their weaknesses are least harmful. If you are successful in so doing it is advantageous to the men because they then have the greatest opportunity to develop and to grow and to do responsible work and get a good salary. It is also most helpful to the agency, because then your people are most productive.

VII Broad Alternatives in Administration of Resource Development Programmes

Let us consider some of the broad alternatives in the administration of resource development programmes. Suppose now that your government is definitely going forward with some sort of a resource development programme. Before we get into the many detailed problems of administration, the first question may be, how shall that programme be organised? This

is without respect to whether it is an irrigation programme or a crop improvement programme, or a health programme. The answer is really in two parts—

- (1) What is going to be your central organisation? By that I mean at the national or provincial level
- (2) What is the organisation on a specific project?

CENTRAL ORGANIZATION

At the national level, or at the provincial level, you are almost surely going to have some form of a government agency. It may be a department, or a ministry, whatever you call it, or it may be a bureau or some other such name, whatever you call it, but some form of a direct government office, staffed by government employees, paid out of government funds, with the regulations and restrictions of government. The alternatives that are outlined below for specific projects in general are not applicable to organisation of a programme at a provincial level.

Perhaps the two most important problems that such an agency will have to face are:—

(1) To integrate its particular resource programme into the whole political and economic programme of the administration or political party that is in power. That is one of the problems that Dr. Singer has been developing from the economic point of view. If you are, for instance, the head of the irrigation department of your province or of your country, where does irrigation fit into the entire national programme, financially and otherwise? What proportion of your country's programme is set up for irrigation? For irrigation you can substitute health control projects. If you were the head of one of these departments in your country or in your province, part of your problem would be to see your programme in relation to the entire programme. This sometimes puts you in a difficult spot, because if you are an irrigation engineer you want to push irrigation in your country or in your province, and yet part of your job as head of the irrigation department is to see that the irrigation programme is in reasonable relation to the other programme. It would be a serious error if because of your splendid planning and because of your wonderful salesmanship you induced your country to carry on five times the irrigation programme it can afford.

(2) The national or provincial agency must supervise, direct, and correlate the resource development programme in various parts of your nation or your province. The correlation of your irrigation programme, in one part of the country and in another part or the health programme in one part and another part, those are some of the problems which the central organisation has to meet. If you have only one project, there may seem to be no problem. But you have made a choice, because you are going to put your one project here and not somewhere else. To maintain a balance geographically, between different parts of the country, is one of the problems of the central organisation. One of your problems may be the national provincial relationship, depending again upon the structure of country.

ORGANIZATION FOR SPECIFIC PROJECTS

I am going to sketch rather broadly some of the organisation and operation problems for any kind of project unit that is set up. While I am going to attempt to list some of the advantages and disadvantages of these alternatives, the choice between them is likely to be based upon conditions peculiar to your own country. Attitudes in your own country or experience in your own country or prevailing organisations in your own country may determine the choice among these as much as their inherent characteristics. Availability of capital or other availabilities may be just as important as the characteristics of the organisation, itself.

(a) *Government agencies*

The first and most obvious way of handling a specific project is by means of a direct government agency. An irrigation department at the national or provincial level may simply have a branch for a particular project. That is a very natural alternative and has a good many advantages. In the first place it means, probably, the simplest possible government structure. If you have the same bureaus and offices at the project level that you have at the national or provincial level, your government structure is probably the simplest that it can be and that has a good many advantages in itself. Your legislature or your parliament or whatever you call it will find it easier to understand and perhaps to support an agency which has a simple organisation structure. And it probably would be understood by the general public. It has an additional advantage in that it probably provides the greatest flexibility and opportunity of training of personnel and movement of personnel from actual construction and actual field operations up into higher and higher positions in your organisation involving a broader and broader responsibility. As a man gains more responsible experience, he moves up into successive positions in the organisation and in time your central organisation comes to be staffed with people who have had personal direct field experience, and that has a great many advantages. And the converse movement sometimes occurs too. Your engineer or your man in charge of a particular project may have had some years experience at the central office. This plan of organisation gives you opportunities to train men, broaden their experiences, and to provide co-ordination of various programmes.

Now as to the disadvantages, I was very much interested the other night when the president of the State Bank of Pakistan gave as one reason for setting up a state corporation the ability to get away from all the "red tape" of standard government procedure. Well, I presume that is something that can be said in every country in the world. It seems to be one of the inevitable results of a government programme that in time you come to have a great bureaucracy with a great many rules and regulations, which often seem to be too cumbersome, too time-consuming, and requiring too much manpower just to carry out your work. There are too many procedures to go through—inefficient, indecisive. It is also true apparently almost generally, that the government bureaucracy with its emphasis on career service of your employee, protection of their rights, good retirement provisions, and what not, tends to accumulate some deadwood. Now it is easy to cite these faults in government operation, and anyone who has had

A little experience can always find some amusing examples to put forward. One of the great fallacies of people who look at such examples is to assume that they do not exist in private business or that they would not exist in some other form of government organisation. In other words, merely because standard government agencies have certain shortcomings, does not prove that some other kind of an agency would not have the same sort of shortcomings

(b) *Valley authority*

There has been a great deal of publicity in the world about the Tennessee Valley Authority in the United States. I think there is a great deal of misunderstanding also. An authority is simply one form of government agency. It has responsibility for a variety of programmes in any area, whereas otherwise our government is operated on a functional basis, with irrigation in one place and navigation work in another place and so on. In the Tennessee Valley Authority all of those powers for a particular region were combined into one agency. The problem of functional organisation, or specialisation along functional lines, as against regional or area organisation is one of the matters to which I want to return in later lectures. In the Tennessee Valley Authority we have the outstanding illustration in the natural resource field of organisation on area basis. Now there is nothing, as I see it, inherent in such an organisation that necessarily means it will be any worse or any better than standard government agencies. It may, or it may not, have better personnel and better leadership. Now actually, in the case of Tennessee Valley Authority I think it is recognised even by its opponents that it has been quite outstanding in many respects. In my view that has been due largely to the fact that it started off fresh, without a heritage of accumulated red tape. That might not have been enough alone, because you might start off fresh and still have too much red tape. But it did have very high ideals, very ambitious ideas, and high quality personnel, and it started at a time when there was a great deal of high quality personnel unemployed or interested in new jobs. Its leaders were able to recruit some outstanding people and particularly top people. It has done some outstanding things, but that does not prove to my view that Valley authorities always will be able to do outstanding things. Nor does it prove, in my view, that Tennessee Valley Authority will continue to do that for a long time. Wait till the present leadership is old and wait till you have had long bureaucracy and see what it continues to do. It may be outstanding and I hope it will. I do not think it is because of the form of organisation necessarily.

In some places in the United States, take New York City, we have port authorities, in which several units of government are concerned with one resource project. I think this scheme has real possibilities for some situations. Supposing that you have an irrigation project which extends into two or more provinces, it is conceivable of course that each province can carry on with the project in their own province, but that might involve some difficult problems of co-ordination between them. It is also conceivable that a national government should carry on, but an alternative might be the creation of an authority which would be participated in by the provinces and perhaps by the national government. You could have a port authority in the case of one of your ports. The reason that it came into existence

in New York is that several cities in the New York Metropolitan area and the two states, New York and New Jersey, each have a part of the harbour.

An Authority might or might not have the power to expend its revenues without reappropriation, and it might or might not have the authority to enter the money markets. For instance, an enterprise such as TVA will, if it is successful, be getting some revenue from selling hydro electric power or in other ways. Perhaps your parliament will be willing to give the authority the legal power to expend that money without going through the appropriation process, or perhaps they will not. The authority may be permitted to issue bonds or otherwise borrow money from the general public.

As to disadvantages in my judgment there is nothing inherent in an Authority which makes it necessarily and invariably more efficient or more liberal than a government agency. The only example we have had in our limited experience has been outstanding. There is some reason to think that an Authority will find it a little more difficult to develop the highest professional skill than an agency which operates on a functional basis. For instance, if you have a geological survey such as we have in the United States, it is probably easier to develop a high degree of professional competence in your geological work than it would be if you had the same work being done in this province or in that province, some geologists in one place and some in another. It may be more desirable to have your work done all in an area basis, but one of the penalties may be a lower degree of professional skills. Authorities and similar agencies have one weakness, unless supplemented by other devices they cannot well develop a national programme in a particular field. If you have a valley authority for this river and for that river, each may develop its own programme, but it will be necessary to supplement the Valley Authorities with some form of a national organisation which can compare programmes in different regions and prepare some sort of a balanced programme.

(c) Government corporations

A government corporation comes under the laws of your central or provincial government and it ordinarily incorporates on the same terms that a private corporation is established. Articles of incorporation are filed, a capital fund contributed by the government is set up, provision is made for directors and to that extent it is a commercial corporation. The Authority is after all a government agency. I mean the T V A. is a branch of the Federal Government whereas the corporation is an independent corporation with government officials as its directors and with government funds. Legally they may have quite different powers or they may be given similar powers. The corporation may be set up in any one of a number of ways. In the United States, for instance, if the Federal government authorises certain Federal officials to form a corporation, they could form it under a state law. Perhaps that would not be true in other countries. The Federal Government might create a corporation in itself. The exact legal authority as to what it can do and how it is to continue its job, would of course vary depend upon the authority under which it is set up. I am talking now about the corporation in which the government puts up all of the capital.

The advantages of a corporation are much like those of an authority. It does give you a fresh start. If you think you have got an impossible maze of red tape and inefficiency, a corporation will give you a fresh start. If a large amount of capital is put up initially, the corporation then can continue to operate as long as it has capital without the necessity of going for annual appropriation. That is partly a political argument. There have been times, certainly in the United States as well as in other countries, when there was a willingness on the part of your governing body to appropriate money in large quantity that might not have been present at other times. If you have established a corporation you can put up five million dollars or any other amount of capital and say that this may be expended for these purposes. Then the corporation has a body of capital that is independent of annual appropriations. If you had put up a five year development programme, maybe in the third year, the parliament refuses to appropriate that amount. From the point of view of a practical administrator it makes a lot of difference whether you have the money in hand to carry out your entire programme or whether you expect to go back at intervals and get the money. This incidentally is one of the arguments against the corporation from the politician's point of view. He does not want to set up a corporation which can run independent of the legislature for an indefinite period. He wants it to be kept under the control generally of a political body.

A corporation might also be given authority to issue bonds and thus reach into the private capital market, possibly in a way that the government cannot or in a way that was desirable for one reason or another. There is one other advantage to a government corporation which in certain circumstances might be important. Perhaps there is some field of activity that you hope ultimately will be carried on by private capital uninterested to begin it. You might set up a corporation and after a number of years transfer the corporation to a private organization. That has happened in a number of instances in the United States. It is possibly easier for a private organization to take over a functioning organization than to take over its physical assets only. As to disadvantages, a government corporation is not necessarily any more competent or any efficient than a government agency. Merely because the government agency is inefficient does not prove that a government corporation would therefore be efficient. That is one of the great fallacies which people fall into. They say, well, our government is so incompetent, so inefficient, if we could just get up some new forms of government we would do much better. As I said, it does give you a fresh start but that alone may not be enough. One of the other disadvantages I have already mentioned, is that from the government's point of view a corporation may run without political direction. The government corporation capable of carrying out a profitable operation may run indefinitely without any direction from the central government which created it. It may get completely away from the objective set out in its articles of incorporation and it may require some rather drastic action on the part of the governing body to cancel its charter. The independence it has from annual appropriations and similar things may allow it to get completely off the track. Again, there is a disadvantage which we have to judge in light of conditions in your own country. The corpo-

ration does introduce a new form of government, which probably will not be as well understood as your traditional forms of government. I think you always find that legislatures or parliaments are sceptical and hostile to things they do not understand.

(d) *Mixed corporations*

The mixed corporation is partly government and partly private. The only difference between it and the government corporation is that you permit private capital to come in on an equity basis. The government corporation or the authority may be given the legal power to contract loans but the mixed corporation admits private capital on equity basis. It can be set up in any proportion between private and public capital, from 51% or more of the stock owned by government and a minority of the stock owned by private capital, or with a majority of the stock held by private capital and minority held by the government. You will have then part of the equity capital from both sources, and presumably the administration will be provided by public and private sources.

There may be some advantage in admitting equity capital in that sort of a scheme. For one thing it offers some prospect of better returns and higher dividends than the interest upon government loan. You may be able to draw out some private capital on an equity basis from people who are unwilling to loan you the money on a fixed interest basis. It may also have the advantage of starting a more or less formal capital market. You remember Dr. Singer talked about some of the advantages of that. An organised capital market might be very important in under developed countries. These are all possible advantages, which might not work out in practice. There might be some advantages in having a mixture of public and private management. You might get better administration than could be provided by either alone. That would depend greatly on the conditions in each country.

The chief disadvantage of a mixed corporation is that the interest of a private investor, and the directors which he has selected, might be quite different than the interest of the government. The interest of the government in a corporation might be to promote a certain type of activity and add to the national wealth, but to restrict the dividends. On the other hand, the private investor might want to earn maximum dividends. You could of course have some sort of a limit upon the dividends that could be earned, but when you do, then you make the equity capital begin to look more nearly like a mortgage. That is not the only place where the interest of a private investor and the government might diverge. It might be very difficult to co-ordinate private and public leadership. You might even have government administrative people and private administrative people who have very different ideas about how things should be done. The board of directors should formulate policies and resolve the conflicts so that the administrative staff has only to carry out the policies of the board.

I should have mentioned another advantage of a mixed corporation. If you are thinking of turning this activity to private investors, it is probably

a great deal easier for the government gradually to withdraw from an organization which has had some private enterprise in the beginning than it would be to sell a completely government enterprise. Mixed corporations, particularly if you have several of them, and if the mixtures are different, certainly means different types of government organizations, and again, more risk of misunderstanding.

(e) *Co-operatives*

The last group I have listed are cooperatives. For instance, you might have a co-operative association made up of a group of farmers. They might assume the responsibility for construction and distribution of power lines and distribution of electricity in an area. That is a form of co-operative that has been very satisfactory in the United States. Under some circumstances it has a great deal to be said for it. In my judgment, there are certain requisites which if not present severely limit chances of your success. I think you must have in existence already a group of people with certain common interests, a certain relationship among each other, a certain degree of leadership already expressed. If the farmers are well acquainted with each other and have certain common interests and leaders within the area, then a successful co-operative might be formed. On the other hand if you were getting ready to irrigate a new area of land in which there were no people and you were going to recruit people from other districts and move them in, then I would think that the chances of organizing a successful co-operative would be very very much smaller. If they were strangers to each other and perhaps not too well informed about the conditions in the new area, and the leadership which would naturally grow up in any settled community had not yet had a chance to express itself, I think your chances of forming a successful co-operative would be very poor. Co-operatives are one of the great beautiful dreams of planning people. For the most part, they have not been successful, but that does not mean that they will not be. It depends upon the tradition within your country. I would think that in many areas where there is a fairly strong village organization, where things are done by the village as a unit, it might very well have a form of co-operative that could undertake many things. If you are talking about some new kind of activity with which the people have not had experience or more particularly if you are talking about a new group of people, the co-operative chances are much less.

VII Political Origin, Authority and Responsibility of a Resource Development Agency

The next major subject is the political origin, authority and responsibility of a resource development agency. What I am talking about under this heading is largely or wholly irrespective of the major type of government organization. We have talked about government agency, authority, government corporation, mixed corporation, and co-operative. Many problems are equally applicable, irrespective of the kind of agency.

SUBORDINATION OF TECHNICAL TO POLITICAL

The first point I make here is, a technical agency is necessarily subordinate to the overall political power of a government. I think that is an extremely important point for technical people to bear in mind because I think at certain times it has caused a great deal of misunderstanding. It seems to me inevitable that a technical agency should be subordinate to your political powers and government. In fact, if you have reasonably wide suffrage enjoyed by all or a large part of your population, it is desirable that the technical agency be subordinated to political Government. After all, our technical knowledge and our technical ability are not ends in themselves, they are a means to accomplishment of ends. The latter are part of the culture and social ideology of your people. In many instances I think technical people come to regard their particular technical specialty as being all important, without sometimes consideration of other factors that must necessarily be taken into account.

Even if you were operating in a complete and absolute dictatorship which had no regard whatsoever for the people but only for itself, your technical people are still and perhaps more, subordinate to the political organization than they would be in a democratic organization. In other words as a technical group, whether you are engineers or economists, or whatever your technical specialty might be, you are necessarily and I would say in many instances, desirably subordinate to political power of the country.

I think it is wise to recognise that your political power, your political party, your political leaders, in a country may have somewhat different objectives or goals than your technical people. Someone has said that politicians are interested in getting re-elected as much as anything else. Your Prime Minister or your Minister is interested in the continuation of his party in power. At the same time I think we should start off with the assumption that our political leaders are as sincere in their patriotism, they are as interested in our country as are technical people. And I think it is also probably wise to assume that they are as able in their particular field as the technical people. That may not be true in a particular situation but I think it is better to start off with that assumption. Perhaps in some instances they are more able than the technical people, recognising that their functions are in different fields.

Most political leaders want the development and other programmes that their government sponsor to be as complete a success as do technical people. Some mistakes have probably been made, but in many instances the political leaders had considered other factors than the strictly economical. They may have made a mistake in so doing, or they may have under-estimated certain points, but I think we ought to start out with the assumption that they are as eager to see our programme start off satisfactorily and successfully as we are.

Speaking as a former technical worker, now turned an administrator I would say that one of the most important jobs, particularly for the leader of any technical group, is to sell himself and his agency to his superior, so that he has confidence in you and in your work. If you have

the complete confidence of your political superiors, whoever they may be, you can often prevail upon them not to do some of the things that you think are serious mistakes and you can often-times guide their actions into what you believe to be desirable channels. I think that it is possible to have the very highest standard of professional technical work in a planning or a development agency, and at the same time consider the political situation, the political forces, the political leadership and try to fit your programme into those. I think that should and can be done without any participation on your part in partisan political activities. You can remain strictly neutral on partisan matters and still have a real influence on most government programmes of any importance. There are always political angles. It is stupid to pretend that they are not there.

Question—What if you have frequent changes in political parties each with a completely different programme?

Answer—It seems to me that it is rather unfortunate if your political parties have great instability. That is, if a programme is begun by one party and completely abandoned or reversed by the other party and so on backwards and forwards, certainly your country is going to suffer badly in terms of development. But the only alternative would be for your technical people to have greater authority than your political people, in other words, to have technical group completely independent of any political control. The only logical consequence to that is that shortly your technical people usurp political control. You have, in some countries, what started out to be technical people now actually political people. And when that happens, your so called technical people may become a super political power beyond any control of your citizenry. And I think the consequences would be far worse than the reverse. If you do not have a certain amount of political stability in your country, it may have serious repercussions upon the development programmes. But I do not think the solution is the creation of a super political power of technical people.

Question—Are there any countries in which resource development programmes are supported by all political parties?

Answer—In the United States we have half a dozen programmes in the resource field that have bipartisan support—reclamation of arid land, soil conservation of privately owned land, administration of national forests, administration of grazing districts, and others. Those have gone on indefinitely in the United States since they were first set up. If we were to have a complete change in political organisation, all those programmes would continue. They might be modified, they might have more funds, they might have less funds. The particular features of those programmes might be modified somewhat, but the programmes themselves in general would continue.

I think it is possible to have excellent working relationship with your political superior in a way that your programme strengthens what he is trying to do. After all, the only way that he can get any political capital out of your programme is a good job well done. He is just as eager, if he is a good politician, as you to do a good job. There are things you could do which might prove embarrassing to him or there are other things which might fit

in with some of his political programmes. Wh. I think technical people can be more effective and standards of integrity and competence can be some realization of where they fit with regard to

In a case where the administrator seems on mistake, I would say that technical people should represent to him that his proposed course is the kind of confidence from you political leaders such a presentation on your part should have. In the United States there are many instances in which decisions take place among the political leaders and department. Sometimes some compromises come. I mean to say at all that your technical people should not criticize political matters and particularly should not criticize political structure of your country or else you be rising completely above it.

BASIC LEGAL AUTHORITY

What is the basic legal authority for the programme and the agency? If it was an Act that government, or your governing body, what are the terms? What was its history? If public hearings were open debates on it, what do they say? If the what are its terms and its history? Now perhaps in other countries but I know in the United States there are people who are unfortunately ignorant of the basic law their work rests on. I think that is a most serious thing you should do, and any new employees that you become familiar with your basic legislation and many instances you will find the Act permits you to do things, but on the other hand it may prohibit you

There are two broad lines of thought as to what you should do. One of them is that he should stick rather closely to the intent of his enabling legislation. If it forbids that he wants to do, of course he should not do it. The other thought is that the administrator should do what he wants to do, unless it is expressly forbidden by his enabling words, these are sometimes called 'strict constructionists'. In many instances it may be difficult to say whether the legislation was really intended to cover the situation and have some difficult decisions to make. My own view is that an administrative group on the whole will be guided by the intent of the legislation. If you think the legislation should be amended or modified, then by all means go to your political leader and try to get the legislation amended while it remains a law under which you operate, it is wise to stick closely to it.

As I say, I think the first thing you or any of your employees should know is what are their legal powers. You may find in many instances that they are not what you think they are, unless you have recently read the Act and the order under which you really operate. This sounds so simple and so elementary, and yet my experience has been that it is so often ignored or neglected that I put it as a very high priority.

CREATION OF A RESOURCE DEVELOPMENT AGENCY

How and by whom is the resource development agency created and its top person or persons chosen? That in turn frequently goes back to the enabling Act or the enabling order, and also to the earlier discussion about political *versus* technical responsibility. Your agency was created in some way by an Act of your Parliament or by an executive order or something of that kind. Now, how was that created, and by whom, or what was the opposition and so on?

In the United States our agencies were created originally by Congress with one party or the other in power. Ordinarily there was a considerable amount of bipartisan support at the beginning and this has often continued.

The Act or the order may itself establish who are to be the top personnel in the agency. They may be *ex-officio* persons. On the other hand there may be considerable latitude of appointment on the part of someone. Perhaps your Prime Minister or the minister of your department can have virtually a free hand in the appointments for a particular resource agency. Well, then the question comes, what sort of factors does he consider in making such an appointment and whom has he to choose from in making these appointments? Even in the United States where there are many thousands of well trained people, it is by no means easy to find a truly outstanding leader for a particular programme. To find a man of great professional ability, of good training, and with experience, is often a difficult matter. I should imagine that in an underdeveloped country the problem would be infinitely more difficult. In one sense it might be easier, because often you have only a few possible candidates. If any of you have ever had the experience of trying to find someone to fill what you consider to be an important spot in an organization, you know that it is by no means easy to find such a person. The various factors considered will differ and the weight put on them will differ, under different circumstances. If you are establishing a new irrigation department or an agricultural credit department, you may insist that the person at the head of it be technically trained. That of course eliminates a large number of people. Or you may insist he should have had administrative experience, which will eliminate a considerable number of people and usually different people from the first test. Ultimately you are likely to get down to a choice between a very few individuals. None of them may be fully satisfactory.

The initial choice of people to head an agency is an extremely important matter. It is one that needs particular consideration, because the character of the organization and its productivity for a long while are going to depend predominantly or largely upon the top person. Any agency in time tends

to take on a lot of the characteristics of its top leaders. If any agency is poorly run, then the responsibility is always that of the top leadership. On the other hand, if it is a well run agency, a lot of the credit belongs to the top leadership. The problems of each agency are different and the way it solves them is different. But if it does not solve a particular problem then I put the responsibility on the top leadership.

In setting up the top leadership of an organization, the particular personalities may turn out to be very important. If you get an outstanding and able person who remains there over a period of years, your agency is likely to have one kind of history and one kind of an experience. If he is a less competent person, or if you have many changes in persons, or if you have someone at the head who is not working harmoniously with his superiors, you can have a difficult time of things. As technical people within an agency there is ordinarily nothing you can do to influence the choice of a leader for your agency. My guess is that in time the members of this group, some of them, are likely to be heads of resource development agencies, nationally or within a province. And some of you may find that it is not as easy to be the head of an organization as it is sometimes to be a member of it. In other words, it is much easier to see how an agency should be run when you are not actually running it, than it is when you are running it. I know again from some experience.

Even though as a member of an agency you cannot influence the situation, it is well to be aware of it. In other words, there are some kinds of things which some agencies can do under certain leadership and under a certain political climate which could not be done under other circumstances and other political climates. A lot will depend upon particular technical people. If they have great independent professional stature, so that their abilities were well known and widely recognised within their country, a strong stand on their part in opposition to a programme would be extremely effective. On the other hand if their ability was less or if they were less well known, or if in the past they had been wrong in similar situations, then of course the political leaders might pay much less attention to them.

MAINTENANCE OF COMMUNICATION

By what method does the resource development agency maintain communication with the political person or body to whom it is responsible? In my thinking that is an extremely important matter. I deliberately used the term 'communications' in its very broadest sense to mean a common understanding. The communications may be formal and written or they may be informal and verbal. They may take any one of many forms, and may be ineffective or effective in a great many different ways. You may get from your minister or other political agency, formal orders or formal instructions or formal statements of policies. Those formal things are of course extremely important. As a technical or administrative agency you may make relatively formal reports to the political sponsors or political agencies to which you are responsible. You may make a formal annual report which may or may not be published. You may have occasion in various situations to ask for instructions, or for a policy statement.

ORGANIZATION AND ADMINISTRATION

Much more important, ordinarily, and much more difficult for you to finger on, are the informal and the personal contacts. In many cases it is not they are the deciding ones. If you are the head of an agency, such as the irrigation department, do you know the minister personally and how well do you know him? How much attention will he pay to what you say? There are a thousand and one questions that are not easy to handle and they are nearly difficult to know the answer. In the United States, many Federal agencies have excellent working relationship not only with their department heads but with many influential people in Congress. I recognize that situation differs in each country. As I understand the United Kingdom, the Civil Servant and Parliament, ordinarily the Civil Servant will not come into direct contact with Members of Parliament.

The personal contacts which you have are extremely important and may have as much or more to do with the success of a programme than all of the refined economic analysis or other analyses which you may make. It is no use to make the finest plans for a technical or a planning or an administrative agency, if you cannot sell them. In that connection the technical administrator in an agency has a particular responsibility. If the head of the bureau or the department or whatever you call it, has the major responsibility for contacts with political agencies and with the general public, it is on him who shoulders what the general relationship between the agency and the political party is. He may have a lot of help from his staff or he may carry the load pretty well himself.

One specific suggestion I would make to you in that connection. Ordinarily your efforts at gaining public understanding and understanding by the governing members of your country will be more effective before an issue reaches a controversial stage. After a controversy has broken out over some policy and after it has become a public issue, ordinarily your influence is not going to be very great because most political figures will have taken positions, either publicly or with certain important parts of their constituency. If their position is different to your suggestion, you are asking them to reverse themselves after they have already taken their position, and that is very difficult. Of course if their position is the same as you are recommending then there is no point in your recommendations.

To the extent that you are able to foresee policy issues that are going to arise in months or years ahead, and to the extent that you can discuss them with members of the cabinet, while they are still in their formative stage, and before they have become a public issue, your influence is likely to be much more than if you wait until the issue breaks out into public controversy and then you go to someone and say, you are on the wrong side of it. First of all, he is likely to be unconvinced and, secondly, it may be extremely difficult for him to reverse himself. Now that may sound very obvious, and yet time and again professional people have attempted to influence political figures in their thinking after something has become an open controversy. Then it is ordinarily too late.

I would almost go so far - I am going to exaggerate a little bit now - but I would almost go so far as to say that it is better to be in open conflict with your political governing body than it is to be ignored by them. If

you are trying to carry out some technical planning work in an underdeveloped country or for that matter in a highly developed country, no matter how competent your work seems technically to your professional colleagues, if it is unknown, it just does not exist. Its influence will be of course very very limited. The ideal situation is when the planning agency or technical agency is widely known in the country as competent. That is the ideal situation. That is something that you do not build overnight. It is extremely important for an administrative development agency to have in mind how its results are going to be used in a national programme.

AUTHORITIES AND POWERS OF DEVELOPMENT AGENCIES

What are the authorities and powers which the resource development agency possesses? They grow out of the Act or the order establishing the agency. That carries us back to what I said about reading your basic legislation or order and knowing what it is. These authorities and powers can be divided into three broad categories, administrative, financial and legal. Those are rather broad terms to describe a series of authorities,

(a) Administrative powers

The administrative powers are mainly two. First with regard to personnel. If you are in a resource development agency what authority do you have to employ personnel? How do you select them? What sort of salaries can you pay them? How many can you employ? and the like. The resource development agency may be subject to all the limitations that apply to government generally. I know that many countries in this part of the world have systems of civil service and use of personnel that are similar to those which we have in the United States or in the United Kingdom. The idea of selections based upon examination, definite raise in salaries, retirement systems, and all the rest of it are included, I think in general that the security of the government worker has gone to the point where it has probably reduced government efficiency. We exercise too much concern over the security of the employee with the result that we undoubtedly have less efficiency than we would have if it were easier to discharge someone. But those are some of the facts that we have to contend with. If a corporation is set up, it may or may not have the same restrictions, or if it has different restrictions, they may not be more effective. One of the possible advantages of government corporations is that you can have a freer hand in personnel policy. Well, maybe you will or maybe you won't. If you do have a freer hand, maybe you will exercise it to better over advantage and maybe you will not.

Are there any political considerations involved in appointments of personnel? Generally speaking, technical agencies dislike very much to give any consideration to political factors in hiring personnel, and I would heartily echo those sentiments. It does not, however, invariably work out badly. It depends a lot on the circumstances under which the political appointments are made. If they are made as a means of rewarding some

political hack, then you are likely to get inefficiency and incompetence and perhaps insubordination after he has been employed. But if you are in a period as many of your countries may be, when you are undergoing almost a peaceful revolution, when great new horizons are opening up, and you need the best brains, the best competence the country can afford. You can sometimes staff a programme that way. People who would normally not be interested in government services, will go into government in time of national emergency, not only war but special government programmes. You may attract a type of personnel that otherwise you would not get. So as I say, political considerations are not invariably and completely disadvantageous.

The other item under Administrative Powers, is the power to expand funds. I do not know what the customary practice is in the countries represented here, but in the United States the appropriation made by the Congress and approved by the President puts at our disposal certain funds, for various purposes. From then on, until those funds are expended, responsibility for their expenditure is entirely in our hands, except that we must keep accounts on prescribed lines. Those accounts are audited by an outside independent agency, namely in our case, the General Accounting Office. It is responsible to the Congress and not to the President. That agency ensures that the money was spent honestly and for the purposes for which it was set up. The administrator of a programme, such as an irrigation programme, ought to know what the expenditure regulations and policies are. He does not need to be an accountant, he may have a staff of accountants. But he should know for his own protection the limitations to which he is subjected and also the possibilities there are.

(b) Financial and fiscal powers

Under the strictly financial and fiscal powers the first question is, by what process are the funds made available to you? What is your appropriation process? The most modern government practice is for an agency to prepare an annual budget, indicating why it wants funds, what it proposes to do with them and what it expects to accomplish with them. In a great many respects that sort of a statement is similar to the projects reports that you are now preparing. Your project reports list the various features of a project, indicate what you expect to accomplish, what funds it is going to take, what are you going to produce, etc. If you or your minister goes to the parliament annually for a appropriation, he and the parliament are likely to want a similar kind of analysis. What do you expect to do with these funds and what do you expect to accomplish if they are given?

And again, of course, the practice differs a great deal in the extent of the responsibility of the agency in the support of those funds. In the United States, the Bureau within the department, in other words, the office within the ministry, defends its own budget. One of the reasons I want to get back to Washington as soon as this Training Centre is over, is because ordinarily somewhere around the 10—15 of January I go up to our House of Representatives and I explain to a committee our proposed budget for the fiscal year beginning July 1. A great deal depends on the kind of presentation

made. If you do a good job, you may get the money requested but if you do not do a good job, you probably get a good deal less. It is also a wonderful opportunity for an administrator to review critically what his agency has done.

Does the agency have authority and if so under what conditions, to incur obligations in excess of its available funds or to use for one purpose funds originally made available for another purpose? If your country operates on an annual appropriation basis, as most countries do, that has a great many disadvantages from the point of view of a resource development programme, which is not confined to one year. If you begin to construct a project you want to carry on through. One device that has been employed rather extensively in the United States is to authorize an agency to incur obligations in excess of appropriations, to authorize some future expenditure. For some of our big dams it takes three years to build the big generators. Until they are ready for delivery you are not obligated to pay anything, and if for any reason they were not delivered then you would not pay for them. On the other hand, the company wants to be assured that the money will be available when the generator is delivered. The Congress in an appropriation act authorizes you to incur expenditures for future years. That is in effect a promissory note on their part that they will honour later. So far there have been no instances in which they have not. Congress is reluctant to make such authorization for the future but once having made them, it does honour them. That is an authority which may or may not exist. Particularly as some of your countries are in a formative stage in fiscal policies, that is something which might well be borne in mind.

An alternative is to make your appropriations on an annual basis but to permit the money to be available until expended, in other words, to appropriate the money this year for the generator which will be delivered three years later and let that money stay there available until expended. There are some objections to that from the administrative and the fiscal points of view. It tends to free the administrative agency from review and control by the legislative body. It makes the money available to you on the assumption that it is going to be needed in three years, but supposing that you do not make use of it for five years, in a sense it has lost control. From the fiscal point of view it means that you have got large balances of public funds tied up for the future but not used. Particularly if your available resources are limited, it may tie up an unreasonable part of them for some future expenditure.

Suppose you have been given funds for some purpose by your parliament for a year, and some entirely unexpected situation arises, do you have authority to devote funds to meet that emergency? I can give you two or three specific illustrations. Suppose that as an irrigation department you have some money to operate an irrigation system and you have some more money to build some additional works. Suppose that you get a severe canal break or some other physical damage to one of your existing features, which you cannot possibly repair with the money that is available for the operation and maintenance of that project, and suppose further that it is going to be 6 months or more until your parliament meets again. In the

meantime a great deal of damage could be done to the farmers under that canal. Do you have the authority to shift funds from the construction of a different project to the emergency repair of this project? Supposing that a severe fire breaks out on government forest lands, do you have the authority to spend funds in the suppression of that forest fire? We expend funds for this purpose even though they are appropriated for some other purpose. Congress has replaced those funds which were expended for the emergency purpose.

In some of your countries, if you are building a government structure, for resource development, you might well bear some of these things in mind as possibilities.

If your agency is authorized to spend funds either during the fiscal year or at some future time, will the cash be available when you get ready to spend it? That is a problem outside your jurisdiction, as head of a resource development agency. If you are concerned with the general fiscal policies of a country, it is something for you to consider. But even a resource development man ought to be fairly well aware of the problem. If your government is fully responsible and capable, it will not of course appropriate money that it cannot expend, because no matter how limited your country's resources are, you have not accomplished anything by appropriating money and agreeing to do something which, when it comes right down to it, you have not got the cash to do.

A more likely situation is that you start upon a programme to take several years and you plan out a definite programme, year by year, as you are supposed to do, and the government embarks upon it but half way through it, it either changes its mind about the wisdom of completing this project, or it changes its mind about its priority in relation to other projects, or what is more probable, some entirely unexpected situation arises. Take the extreme case of war, for example. With the best of intentions, a project is begun that is going to take five or ten years to complete, and you get two or three or four years into it, and your country gets involved in some sort of an international situation, priorities have to be drastically revised. Obviously under those circumstances, your programme may have to be changed and again that is completely outside your control to do anything about. All that you can do is to have borne in mind throughout the early stages the possibility that something like that should happen, so that you are in the best position to close up your project or carry it forward at a greatly reduced pace, with the minimum of loss. If you were building roads, instead of having say 300 miles of road under construction all at once, in a particular area, and taking a year to complete it, may be it will be better to have 50 miles of this road under construction and have it completed in two to three months. In other words, carry out your programme in such a way that it could be adjusted downward quickly and on short notice with the minimum of loss. Perhaps that situation will not arise. Perhaps your country is fortunate enough to ignore completely and safely such things, but may be not.

One last point arises under this general heading of financial powers. Supposing that you have made some rather careful plans, but in actual practice it works out quite differently than you had planned. Perhaps you

estimate the cost of building a dam at a certain figure and when you actually got to building it it costs you 25% more. What do you do? How far will the agency itself have authority to make changes? How far must it refer the matter to the sponsoring or authorizing political body? If the users of an irrigation project or a hydro-electric distribution project contract to repay the costs and the cost rises much more than you had estimated, perhaps to the point where the users cannot afford to pay for it, does your agency have authority to reduce those prices or write off part of the cost? This comes back to the point as to whether your project is self liquidating or not. There are probably no general rules that you can lay down in all cases. The situation will differ from country to country. In some instances you will have the authority to make adjustment, and in others you will not. Again it is something you ought to bear in mind.

Legal powers

(c) The legal powers of a resource development agency can be divided into three categories. The first one is to make a contract. I am not familiar with the legal systems of the countries here involved, but, if your legal systems are generally similar to those in the United States or United Kingdom, the essence of a contract is that it is binding. It definitely holds both parties to certain courses of action. The authority to enter into a contract which is binding upon the government is a very important authority. Contracts can be of two major types, one is a contract for construction in which you commit the Government to expend a certain amount of money in return for a certain construction, and the second is that you enter into a contract with organizations or individuals by which they agree to make certain payments to you. In our practice, the second type would be exemplified by a contract with an irrigation district in which the district agrees to repay certain of the project costs. Somewhere in the government there must be authority to make contracts for expenditure of funds and for repayment, if repayment is expected. That authority may be lodged only with the minister or it may be in lower units of government.

If you are in an administrative position, you most certainly should know precisely what your legal authorities are, so that you do not overstep them.

A second legal authority is what we call the right of eminent domain, or the right of the government to take land for its purpose. I know you have that right under different names in different countries. What are the rights of your government to take privately owned land for public purposes and how do you define 'public purposes'? For instance, there may be a tract of land within an irrigation district which the owner does not wish to sell, and is unwilling to use for irrigation. It is a public purpose to take that land from him, with due compensation, and sell it to other private individuals for irrigation? Or is public purpose limited for instance, rights of way for canals? That again will vary from country to country and as an administrator you must know what your authorities are.

The way in which that right is exercised may differ too. In the United States you can file in court a declaration of taking and just take possession of the land. Then the whole procedure of payment and so on is carried out in a subsequent legal action. Ordinarily for a resource development project that sort of thing is unnecessary but if you are building a canal

through one irrigated area in order to reach another irrigated area, you may have some difficult problems. One of the things you ought to think about when planning your project is to allow sufficient time to go through legal procedures in order to acquire those areas. It is customary with us for instance to start to acquire rights of way a couple of years or more before we expect the construction to reach that particular area.

Can the agency bring suit against individuals or groups of individuals and can it in turn be sued by them? If you have entered into a contract, with somebody and they default on the contract, does your agency have the authority to bring suit against them in the local court? If it is allowed, how is it done? In the United States such suits are made by the Department of Justice. There are various details which vary from country to country. But again as administrator, irrespective of your own professional background, you ought to have some knowledge of this sort of thing. You may need to have competent lawyers in your agency.

DRAFTING LEGISLATION

I think your technical and administrative people have a further responsibility to aid your political powers in the drafting of new legislation. That may be a fairly important thing in under developed countries. After all, social instruments such as laws may be just as important to your development as a physical instrument. As Dr. Singer pointed out in one of his lectures, the knowledge that a country has, may be just as important as a physical asset. The drafting of good legislation calls for at least two broad types of skill: one is technical knowledge, whether it is irrigation or agricultural or whatever. It is, second, somebody in the group must have some knowledge of how to draft legislation with the minimum of ambiguity and misunderstanding. Again, the normal practice may differ considerably in different countries. In addition to the formal practice there is frequently an informal practice. In other words if your minister wants to sponsor a bill, he may call formally on you for some help or he may talk informally with you. However, it is done, one of the real responsibilities of technical people is to aid in drafting of legislation.

IX Organization and Operation Problems

The next major subject is the organization and operation problems which an agency must face. I am trying to put this in broad terms. Whether you have a straight government agency, a Valley Authority, a government corporation, or a mixed corporation, you will be faced with most if not all of these problems. These are general organization problems that almost any agency will have to face.

DIVISION INTO COMPONENT PARTS

The first point is division of your agency into component parts. If you have only a very simple organization and there is not any division into component parts, there ought to be a definite division of responsibility among

you If your agency is any larger than perhaps four or five or eight to ten people, you are almost surely going to divide it into some sort of sub units. Then the question comes, on what basis do you divide into sub-units and what are the functions and responsibilities of each? In some instances you have little opportunity for a decision. Maybe the decisions have already been made for you. Your minister or your superior perhaps has already made the division into units. You may feel that a different organization would be better, but it is hardly worthwhile to change this present one. On the other hand, particularly in a new programme, or in an expanding programme, the form of organization is often times open to change.

There are two broad bases for division: one is along functional lines and the other is along geographical lines. On the functional line in agriculture you might have crops, soils, livestock and other branches. Or if you are an engineering organization, you might have designing engineers, construction engineers, and the like. In any of them you might have a unit that was responsible for strictly administrative activities. In the United States we call it "housekeeping." This includes the issuing of cheques, the payment of expenses, and the payments for various purposes as well as what ever necessary papers have to be made out in the appointment of personnel and the like. Depending again upon the kind of work, you may have a separate legal staff. Sometimes you may have a separate unit for information work.

Whatever the number of units on a functional basis, and even as I say, if you have a few people, say half a dozen, you ought to have a clear definition of their duties. One of the most common things that happens when an outsider goes into an organization, any organization, is to find some instances when two of you are thinking the same thing is your job or to find certain jobs which everyone agrees have to be done but nobody accepts the responsibility for them. One of the first things that any unit, no matter how large or small, should do, is to have definition of duties for each person. If it is a larger organization, you should have to define the duties of the different branches and how the work in one branch relates to another.

If you are talking about an irrigation project, or a single small staff of a central office, you just have one unit and that is all there is to it. But if you are talking about an irrigation programme for a province or for a country, you are likely to have several projects. One of the first things is to decide whether each or those projects shall be handled under separate administrative units, or whether they shall all be under the central office. Often times it is most advantageous to have each geographically distinct project made a separate administrative unit. There are times when that is not so simple. If you are talking about an irrigation project, it has definite physical boundaries and definite physical works. That is simple. But supposing you are talking about an agricultural programme which is carried on all over the province or country, maybe you will run it from your central office, but probably you will have sub-offices. Then the question comes, where will you draw the boundaries?

Again, there are two broad types of criterias which you use: one is what I call natural or physical boundaries, and second, political or governmental

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boundaries. In the case of an irrigation project, it is quite simple. A lot depends on the kind of work and the kind of contacts you have. If your programme is carried out largely within your own agency and it is intimately related to several physical features such as an irrigation project, then it is better to have it along physical lines, even though that may cut across two or more units of local government. Other programmes may be closely related to the activities of local governments that your geographic sub-division should follow their boundaries.

SPAN OF CONTROL

In general, no one person can supervise the work of a large number of people. A lot depends on the circumstances. If each person is doing the same sort of work, you can have a supervisor for perhaps 20 or 30 employees. On the other hand, if you were a general administrator and you have four or five distinctly functional lines of work, that might be all you can effectively supervise. If you attempt to have too many different lines of work supervised by one person, the result is confusion and inefficiency. This is related to this matter of centralization and decentralization to which I will refer later.

The idea of a limitation on number of persons one individual can supervise is known as the span of control concept. In general, one person cannot ordinarily supervise more than 10 people effectively. If there are a larger number of persons, particularly if the job of each is different, it is ordinarily desirable to have some intermediate units in the organization. For instance, if there are 30 irrigation projects in a country, it may be desirable to have assistants, each in charge of groups of 5 to 10 projects. He could then report to you, if you are the director. He could give each project closer attention than you could possibly do, and at the same time could refer to you the important matters for your final decision.

CO-ORDINATION OF FUNCTIONAL AND GEOGRAPHIC SPECIALIZED UNITS

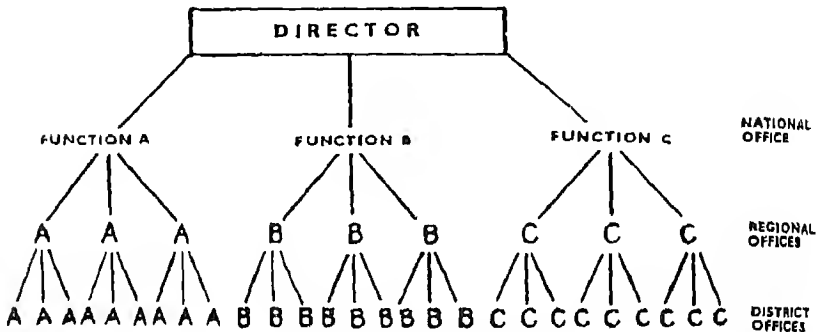
How do you organize a programme of any size, which has a lot of different physical features, required specialized types of knowledge, and also has a wide geographic organization? There are two broad types of organization known as line and line-staff organizations. These are illustrated in the attached diagram. Your director, or whatever you call him, divides up his work for simplicity's sake into three branches, (a), (b) and (c). For instance he may have a designing engineer, a construction engineer, and an electrical engineer. This division along functional lines is repeated at national, regional and district offices. The employees in each functional line are responsible to their superiors in the same functional line. There is no co-ordinating mechanism except at the very top. This is the extreme of functional organization. In the agricultural field, one function might be research, another extension, another inspection, etc.

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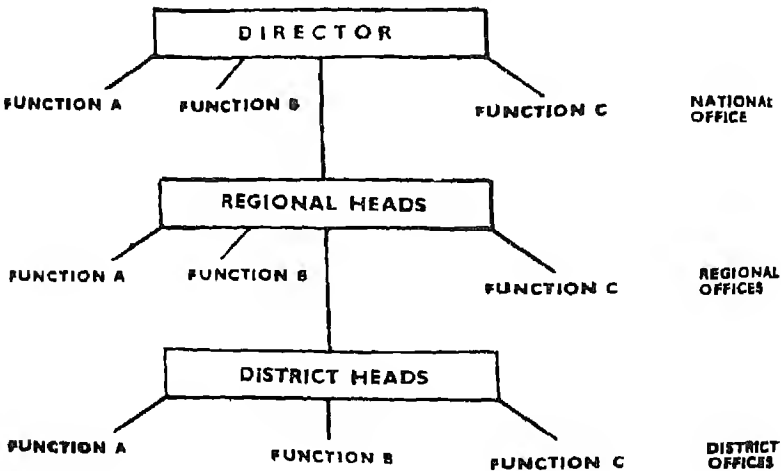
The contrasting form of organization is a line and staff organization. It has divisions (a), (b) and (c) at the national level. It has also regional and district offices. The line of authority runs from the national director to the regional head to the district head. Each has the responsibility of co-ordinating both functional and geographic units under his direction. The regional office may also have a specialist in (a), (b) and (c) functions. Likewise, the district office may have similar specialists. In each instance, these functional specialists are subordinate to their geographic head. At any level this top person, whoever he is, has the responsibility of co-ordinating these various functional specialties for his area, and also of co-ordinating any geographic units subordinate to him.

MAJOR TYPES OF RESOURCE AGENCY ORGANIZATION

1. Line Organization



2. Line and Staff Organization



As a matter of fact few organizations are completely at the extreme one way or the other. They all have a degree of compromise between functional specialization and geographic specialization. The question is where the compromise takes place and how the necessary details are reconciled, one against the other. Generally speaking, in resource development programmes geographic considerations ought to take preference. In the U. S. the emphasis has been upon geographic specialization.

I might point out to some extent that your national government or your provincial government have the same problems. Most governments are organized in the form of departments, ministries and what not and those are subdivided into various subsections. But those programmes ought to have a considerable measure of consistency and ought to add up to something for a particular area. The government may be carrying out a programme which considered by itself sounds good. But some other branch of government may be carrying out a different programme which, considered alone, also seems satisfactory, but which actually conflicts with the first one. In my judgment there has never been any thoroughly satisfactory resolution of this problem.

STAFFING OF AGENCIES

An agency in time is what its people are like. I mean, if you have able, energetic, idealistic people, you are going to have an outstanding agency which is going to accomplish a lot. On the other hand, if you have got a lot of personnel who are not genuinely interested in their work and are negative or passive in their attitudes, you are going to have a poor development programme.

One of the first questions is, 'How many workers do you need in your agency?' The first principle of administration is to get done the job that you were given to do, but the second principle is to get it done with the minimum of man power and the minimum of expense. Because after all the administrative part may be extremely important and absolutely necessary, but only to enable the productive specialists to produce. I do admit that administrative people are not productive. But as an administrator my main accomplishment is to give somebody else a chance to do his job, to get something done.

The question now comes 'How many workers do you need on the job to carry out the work which has been given to you and what kind of ability should they have?' It may be difficult to answer that, particularly if you are starting out with a new programme. You may not fully realize the magnitude of your task. However, a great deal of progress has been made in many countries, in government as well as in private business, in use of work load studies. How much output can you reasonably expect from an average person whether it is filing letters or typing letters, or anyone of ten thousand things? Studies can be made of each specific job, usually by a competent person who is not particularly skilled in doing that particular job. On the basis of such studies reasonable standards of average output can be established. Such studies are common in the United States, both in government and in private business. They have been used at times as a basis

to speed up the worker's output to an unreasonable level. Every allowance must be made for reasonable output of effort and for reasonable application of effort. You can set up reasonable standards, which can always be adjusted to special situations as necessary. Without such studies, it is extremely difficult to estimate personnel needs.

The proper use of supervisors at various levels is also quite important. A supervisor must lay out for the workmen what their job is, must help them in carrying it out, and must help them do it. A good supervisor must have a lot of more or less scarce human qualities. To direct their work and make them like it, is not always a simple matter. Rather regular training sessions should be held with the supervisors. They should consider such matters as how to lay out new jobs to employees, how to check up on their performance, how to help employees develop and do their best. We find that it pays to make such efforts.

Finding the staff you need is always a problem. I do not know how difficult it is in your countries, but my own experience is that it is always hard to find just the right man that you want, at the salary you could afford to pay. It is never easy and I can imagine that it is more difficult in any country which has not been carrying on a large programme. There are several things that you can do. One of them is to consult with the educational agencies in your country. In your planning of the project, you should consider what skilled personnel you are going to need at various stages. Then young men and women can be trained to develop those various skills. Possibly you can actually employ people and then give them training afterwards. No amount of training is going to do the job alone. You must have a lot of experience with it, and moreover, the kind of experience that is required of your particular line. So, first of all, in planning any kind of a project, one of the things that you have to think about is how you are going to get necessary personnel.

The Department of Interior in the U. S. now each year selects two of its most outstanding young men, ordinarily between 25 to 30 years, college graduates, from each Bureau. For a year those boys are paid their regular salary and given special training in the organization. They are given an opportunity to meet a great many of the top ranking men. As far as I know they have never met the President but they have met some pretty top people. They talk with them about various problems and they are given short assignments in other agencies. We think it has been a highly successful business. That is only one of the things that can be done.

In a great many of the federal agencies of the U. S. there is a definite programme of working with the colleges. We employ a lot of young men on salary during their summer vacations. There is about a three months vacation period and many of our young men are eager to work, to earn some money and above all to get some experience. In my Bureau we employ some of those. In many agencies, it has proved that students often work a lot better than older people and you get value received for your money. They get some good training and above all it gives you a chance to look them over. Later, if you want to offer them a permanent job, you know their capabilities.

In recruiting personnel, sometimes it is possible to give aptitude tests. There are a number of miscellaneous personnel matters, such as promotions. In the civil services of many countries people are promoted more or less automatically. In the U S we try to promote people solely on their ability to do the job, not on the length of their service. It is sometimes possible for outstanding people to get promoted rapidly.

AUTHORITY AND RESPONSIBILITY

The next main point is that authority and responsibility must be coordinate. That is an axiom of administration. If you are going to hold someone responsible for something, you must give him authority. But on the other hand, if you insist on keeping a lot of authority in your hands, then obviously you cannot hold others responsible for the jobs. That is an old and very simple principle of administration but it is surprising how many times it is not practiced. You hear from many an administrator, that he gets poor work out of his group, and he cannot depend on them, etc. In 9 out of 10 times, he does not put any responsibility on them. He insists on retaining all real authority in his hands and as a result they cannot develop the responsibilities themselves. This comes up in connection with decentralization but it is not limited to that. You might have an organization that is decentralized from the geographical point of view, so that all of your main decisions are in the national office, but you could still have a considerable measure delegation of responsibility. Generally, of course, the problem of delegation of authority is tied up with the question of decentralization. Experience in the U S goes very strongly in one direction, i.e. you centralize organizations with a considerable measure of responsibility on the hands of the local officers. The Forest Ranger, the district manager, and similar officers have a large measure of responsibility and authority.

There are persons in government service who are opposed to decentralization, who fear giving authority to their subordinates. Possibly I have a more or less extreme position on the matter, but I think that is entirely a wrong view. Supposing that you have got a highly centralized organization, where, on paper at least and to a large extent actually, you as head of it always make final decisions. The material comes up, you sign everything. How can you size it all up? You are not actually making those decisions, because there are so many of them left to you that you just cannot look into them and you are actually accepting the decision of someone else. When I began my present job, I had to sign 250 to 400 letters everyday. When you sign 250 to 400 letters a day, you cannot possibly read them. In the first place it is 4 (four) hours of hard work. You sign them without reading. But if anything was wrong with any of them, the signer has taken the responsibility. That arrangement no longer exists in our Bureau. There is still of course a considerable amount of material to sign, perhaps 30 letters a day or 10% of what there once was.

Moreover, supposing one of your staff had prepared and you had signed a letter that was completely wrong. Perhaps valuable government property is lost. You have made a bad mistake. Under a decentralized organization

you are not committed to the mistakes of your staff. If they have signed a letter improperly, they can be fired or demoted, but as head of the office you are not committed to their mistakes. Some administrators honestly and sincerely insist upon retaining in their own hands all final decisions. If they are small decisions, and if you have a staff of only 6 or 8 people, you can do that and know what you are actually doing, although you reduce your subordinates to an extremely low level of performance, because you never give them the opportunity of making a decision. They become dependent personnel or resentful personnel. They will not develop to the maximum, to the point where they can carry large programmes themselves. But when an organization is large, a great deal of work comes over your desk, you cannot possibly give it any real attention, so somebody else is actually making your decisions and shouldering your responsibility. If this applies to any of you, I think it is highly important that you should consider how it might be changed. It is far better for an administrator to have a considerable amount of free time, so that he can look into this part or that part of the organization, how the operations might be improved, and so on, than it is for him to sign every letter. In the civil service of the U. S. perhaps the major deciding factor in the salary and grade of the man is the character of the decisions that he is allowed to make. It is not the degree of complexity in the work, but the kind of decisions that he is allowed to make. Because no matter how complicated are the problems on which you are working yet if what you do is always reviewed, and the decision is always made by someone else then you are not actually carrying any real responsibility.

INTERNAL CO-ORDINATION

I want to talk now about some of the problems and of some of the techniques of what I call 'Internal co-ordination'. I want to repeat what I said before that this is applicable to small organizations as well as to large ones. These are not found in a big organization only. If you have only 4 or 5 employees working under your direction, you still find some of these problems on a smaller scale, it is true, but you still find them. It is perfectly possible to have a small unit, 4 or 5 employees, in which the various employees feel that their supervisor does not give them proper consideration, does not utilize their skill properly, does not tell them what their specific job is, does not keep them informed of the work of the unit and in general does not make full use of their services. So what I am going to talk about this morning is applicable to small units as well as to the larger ones.

Now, obviously the formality with which you are going to deal with some of these problems will depend to some extent on the size of the organization. You can carry on certain programmes on highly informal personal basis, if you have only a few employees. You meet them regularly and informally everyday. If you have several hundred or several thousand employees scattered over a large area and many of whom you never see or infrequently see, you must employ more formal procedures although some of their supervisors may use some of the same personal techniques.

This matter is closely related to the degree of decentralization. If you are going to have an organization in which the lower units carry a lot of responsibility, you must do at least two things. One is keep your employees well informed. They cannot carry their responsibilities without knowing enough to take these responsibilities. You cannot ask them to take the responsibilities without giving them the necessary information and instructions. The second thing is that you must set up some sort of a system to insure that they are carrying out their responsibilities properly. That is the whole question of inspection audits or whatever you want to call it.

Now I would argue that even irrespective of decentralization, it is a wise programme to have your employees well informed about your agency work, so that they can see their particular specialized work in the framework of the whole job. I think you accomplish at least two things thereby. One of them is you give them an opportunity to do a better job. If they are made to understand how their job fits in the whole job, they may find ways of doing their job better. On their own initiative they may find ways of doing their job better, not waiting for you to tell them. I think that is extremely important. The other aspect is that most people are going to tackle their job with more enthusiasm and put more effort into it, if they feel it is worth while. After all most human beings work for more than money. We work because we find it constructive and interesting. I think that modern personnel administration recognizes that non-monetary rewards are important. I was telling some of you recently, that when I first went to Washington any publication that was put out by my Bureau at any time always bore only the Director's name, in spite of the fact that the Director never did any of it. Somebody else wrote it. We have changed that now and we put out publications which carry my name as the Director of the Bureau, but they also indicate who wrote the publication. I am sure that has had a stimulating effect on a lot of our personnel, because they know they are getting public recognition for a good job they have done. Sometimes you cannot do that. If your agency does not publish reports you obviously cannot do that, but you can oftentimes give an employee a feeling that he or she has done something to add to the success of your organization as a whole.

That feeling of participation is likely to produce better work and more work out of people and make them happier at the same time. I would argue that is desirable on its own, irrespective of the degree of centralization or decentralization. But it is particularly desirable if you are going to have a decentralized organization. You cannot hold one of your employees responsible for doing something unless you have given him the information which he must have in order to reach a reasonable decision. You cannot hold him responsible for errors of policy if you have never told him what policy is. Like some other things I have said, these are all so simple and yet frequently they are not properly carried out.

And again I repeat, it can be done in the smallest of organizations. If you did not give a typist proper instructions in the beginning and errors are made, do not blame the Typist, blame yourself for that. If you gave proper instructions and they were really clear, they were understood but

they were not followed properly, then of course that is certainly a different story. And so you can find illustrations up and down the line. You can start practising some of these things in your present job. You don't have to wait to be a big shot administrator.

There are a lot of different techniques used to inform a staff. Which of these you might want to use would depend on your own particular situation. Personally I strongly favour a regular staff meeting of your chief people. In the Bureau of Land Management, of which I am the director, we regularly have a staff meeting on Wednesday afternoon. It has to be an extraordinary situation in which we do not have a staff meeting. That is true whether I am there or not. We have a regular order of succession down through five different people as to who is in charge if the others are away. Whoever is the acting director will regularly have a staff meeting. At those staff meetings ordinarily I tell what I have done or what things have come to me or whatever other important things have happened since the last week. There are usually about 15 people present. Each of them reports on matters he thinks will be of general interest. Out of that has come a general understanding on their part of the total programme of the Bureau. As a result, a great many things are done by the people there, with the minimum of supervision on my part. Sometimes things are done independently and sometimes they come up to me for final approval. I am sure that it is a very effective means of operation.

We do one or two additional things which few other agencies do. One of the people who is present is a Stenographer who takes some notes. She prepares the first draft of the weekly newsletter and then that is circulated through the people who are present for their approval. And by Thursday afternoon, the weekly newsletter is down in the duplicating section and Friday it is sent off. Every person in our organization has a chance to read it. Our whole organization has a weekly newsletter about the current activities in the organization. I am convinced that it has paid us in a big way. I should add that our organization is not a large one in terms of numbers, but we have a great many offices, some of which have just a few people in them. Previously many of those offices felt that they were isolated. Now that they get the weekly newsletter, they all get the same facts and they all know they get the same facts. It goes further to stop idle gossip and rumours than anything else I know.

There are many other means of providing your agency with facts and statements on policies. There ought to be some fairly formal system of orders or memoranda on policy, which go from the Central office to the various units of the organization, particularly if it happens to be a decentralized organization. Those may be simple series of memoranda. Most agencies in the U.S. have a "manual of instructions" or a system of instructions in loose leaf form so that you can easily change or revise any particular section. Just take out the old instructions and put in the new ones. When all sorts of problems come up to a particular field office, they have a pretty fair set of standing instructions. In most instances it is not necessary to refer to them, but when there is doubt they will be referred to. If there are questions in the minds of field people after they have referred to

them, they may call upon a higher unit in the organization for further instructions. But at least they can refer to these general instructions.

In addition to those formal methods of informing your staff, there oftentimes are a lot of informal things. Many organizations rather regularly sponsor some sort of social activity, built around the organization as a unit. That of course depends on the situation in your organization and the situation in the country as a whole. Often times it has an important morale building function.

Now, no matter how perfectly you make information available, some employees are not going to get it, some of them may misplace it, but more commonly some of them will get it and not read it and some of them having read still will not understand it, as you intended. And possibly you have people in your organization who, even though they have read it, do not follow it. For all of those reasons, and in addition I would say for your own protection as administrator, you must have some system of inspection, review and audit of the work that you are supposed to do. That is particularly true if you have a decentralized organization.

One of our men from Washington will make an inspection trip to a region. We like to give him a month to do it, but sometimes he will have to do it in as little time as a week. He goes into the regional office and he looks over the work that is done there. Then he goes over the various district offices and looks over the work that is done there. If it is forestry or grazing work, he may see some of the conditions on the land. He may even interview members of the public although that is not common. His purposes are primarily two (1) to ensure actual operations conform to instructions and to established procedures and (2) to see ways in which it will be possible to improve operations. One of the things you can get out of a decentralized organization is that each unit, within some limits is free to develop new ways of doing things. Many local practices are definitely superior. Then part of the inspector's job from thereon is to spread that procedure. That sort of inspection is post-auditing. It takes place after the actions have taken place and of course it is effective only in future actions.

There is a special problem of co-ordination in an agency between the planning work and its actual execution. That comes back to some of the things I said in the first or second lecture. It ties back to the question of whether you have a specialized planning agency and a specialized construction or action group. There are arguments on both sides. It is easy to establish a specialized agency for planning of irrigation or for agricultural work or for any other programme, because the types of skills that you need and the particular personal qualities often are different than in construction or administration. But there are also considerable risks in so doing. One of them is that the plans then may not get translated into actual operations effectively. The people who do the construction may ignore the plans or they may not understand them or they may not be in sympathy with them and they may not follow them fully or adequately. An alternative is to have much of your planning work done by your actual operating people. Now again that depends on your programme. I feel

that in many instances it is better to have your actual administrators developing plans with some technical assistance from planning personnel, than it is to have a specialized planning staff. You cannot always do that. If you are going to build a dam you must have the plans in advance of building the dam. But if there can be the best of understanding between the people who made the plans and the people who are going to carry them out, you are going to save yourself a lot of trouble and you are going to get it carried out in better shape.

ADVISORY BOARDS

The last thing that I want to talk about this morning is the use of Advisory Boards. I do not know to what extent this is common to various countries represented here. Let me tell you again some of our experiences and see how far it may be helpful or applicable to you. For many types of programmes it is possible and desirable to establish Advisory Boards of interested and informed people. If you were going to carry on a crop improvement programme, you might very well set up an advisory board of local farmers and local processors. For instance, if there was a Wheat variety improvement programme, a miller or more than one miller and some farmers and others might be included.

An Advisory Board can do some things for you. There are a lot of things it cannot do, which I will come to in a minute. In the first place it can sometimes make available to you factual information that you do not possess and will find it difficult to get. Now I said sometimes, because you must differentiate between information and opinions which may be biased. There are some kinds of things on which they can give you some good factual information. The Advisory Board can often give you a judgment as to the practicability of some proposed line of work that you are considering, that you could not get very well otherwise. To use Dr De Vries' illustration of the 'Off-Color Cattle', if you had consulted the people in there, they could have said, if you are going to prohibit the export of everything but off-coloured cattle, then we are going to produce off-coloured cattle. They can give you a judgment as to the practicability of a regulation or proposed regulation. They may be able to give a judgment as to the public reactions to your proposed programme. They may say, if you propose to do this, you are going to raise a storm of criticism. At least in that case you know what you are getting into. Of course in many instances they may say, if that is what you are after, you ought to do it this way, not that way. So they can oftentimes give you a judgment as to public reaction. Many of you probably have had the experience of doing something in all innocence and then you get a strong reaction from the public. If you have consulted an advisory board you are less likely to be taken unawares. And the last thing that I think an advisory board can do is to help with the public in putting over a programme. They can go a long way in helping to convince other people.

Now there is a number of things that an advisory board cannot do. Bear those carefully in mind if you should attempt to use them, because most of the trouble comes from trying to get them to do things which it

is impossible for them to do. In the first place, they must be advisory only, they cannot accept responsibility. As the administrator, you are the one who takes the responsibility. If it works well you get the credit and if it turns out badly, you take the blame. You cannot shift it on the advisory board. It ought to be clear to them that you are asking them for advice, but you are the person who makes the decision. You may decide against their advice, for reasons that are good to you. If the advisory board recognizes the fact that you are the guy whose neck is on the block and therefore you are the one that has to make the decision, they will respect you and not be angry if you go against their advice. In the second place, you should never ask an advisory board to advise you on question which involves their own personal interest. That is a difficult point to draw, because on an advisory board you want informed people, people who know about it, who are interested in it. And yet to get people like that, whose interests are not involved, is not easy. But it is asking the impossible of any group of individuals to advise you honestly and impersonally about a matter where their own personal interests are involved. It is just an impossibility. They cannot give you advice on things of which they have had no experience. For instance you cannot set up an advisory board for an irrigation programme, composed of farm people who have never had any experience with irrigation. It is obvious that they will not know the answers to irrigation problems. They cannot tell you anything about a new farm crop which they have never grown. As a matter of fact, if you ask questions about the things that they do not know about, you may get badly misleading information.

Question—What is the number of people who should be on an advisory board?

Answer—I would say in general from 5 to 20 people.

Most of the advisory boards that we have run around 10 to 12, but there is no definite rule. The only point is that you have to get a variety of opinion but if you get too many, then it becomes unwieldy.

Question—Suppose the members of an advisory board cannot agree?

Answer—If you are going to ask them for advice and you are going to make the decision, it may not matter whether they are unanimous or not. What you are after is information and ideas. Now, if there is a serious disagreement within the board, either you do not have all the relevant facts or some people are unwilling to look at all the facts. Those situations do arise. When that occurs it may be unwise to take any action until perhaps you can get a better understanding or general agreement. But if you are not using them to make your decisions, it is not absolutely necessary that you take the decision of a majority.

If you have an advisory board at all, when you establish it, you ought to outline very carefully the scope of its work, from all angles. In other words, on what types of questions are you going to ask its judgment, what are the things you will refer to it, how are you going to use it? In this way you try to avoid later misunderstandings. The second thing is that if you are going to set up a board, you had better be prepared to deal with it on an open, frank and honest basis within the scope of whatever activities you set up. I have seen agencies set up advisory boards and then

refuse to divulge to them information or their agency thinking on important matters, so that the advisory board became only a figurehead and had no real function. I would say that if you are not prepared to consult with a board honestly and openly, you better not set one up, because it not only would be useless, but you are likely to get more criticism than help out of it. Another thing is, you should give it some real problems to deal with. Unless you want a board to help you on your real problems, again you should not set one up. Now any kind of a real problem is likely to be sooner or later a controversial problem. But unless you are prepared to ask the board to help you on your major problems, you better not set it up, because you will pull the board down quickly if you give it only minor and unimportant matters for advice. If you set up one at all, you must be prepared to give it some technical help, but you also must be careful not to dominate it. A board may have a lot of good ideas, but it may need some practical help in trying to get these ideas together. Often times it is necessary to give the board some professional help, while at the same time avoiding domination of it.

INTERAGENCY COMMITTEES

Another device is known as interagency committees. In many instances the permanent organization is on a specialized functional basis. Sometimes a problem comes along which involves several of functional men. You may be planning a new project in which several functional units are concerned or you may be talking about procedural matters within government which involve several functional units or you may be talking about general personnel problems which would involve several units. Instead of setting up a new agency or instead of changing the form of your permanent organization, it is oftentimes possible and simple to establish a temporary committee which cuts across several agency lines. Such a committee may have a great deal of influence or it may be practically useless, depending upon how it is operated.

Interagency committees may be set up for planning the development of river basins. Such committees in the United States have representations of the various departments involved. I think they have been quite influential in the exchange of information between agencies, so that you do not have the phenomena of one agency collecting a lot of information and another agency collecting the same information, unaware of the fact that it already exist. I think they have also been effective in an interchange of ideas. If one agency has certain ideas and the other one has different ideas, sometimes it is possible to exchange ideas on an effective basis. I am sure that in those ways such committees have been of some influence. At the same time they are severely limited by their lack of any real authority. They do not have the authority to compel anyone to do anything.

Such committees have often times been used for other kinds of problems. For instance your agencies may have a good deal of difficulty recruiting trained personnel and you may feel that the universities are not adequately meeting your problems. You may have a lot of different agencies each

employing engineers or geologists or agriculturists. You might very well form some sort of a special committee to review the whole matter of recruitment and use of professional personnel. A committee is drawn from the different agencies so that you have a more or less common and united approach to the problem. Or supposing that a number of agencies within a government department were convinced that the procedures were unnecessarily detailed, you might set up a committee to see how those procedures could be simplified and modified. There are a great many possible uses of interagency committees. Their strength is that they are extremely flexible to meet any problem that comes along. Their weakness is that they depend essentially on unanimous consent for effectiveness. But if in an agency you are encountering a certain problem and you have reason to think that other agencies are encountering the same problem, oftentimes you can approach those other agencies and on a more or less mutual consent basis, establish a committee to deal with the problems. You may come up with a better answer than if you had tried to handle it alone.

OTHER SPECIFIC CO-ORDINATING DEVICES

There are two other specific things I might mention briefly. Many agencies employ a device for internal communication co-ordination, which has different names, but is usually called 'The Daily Reader'. If a number of people in your organization have the authority to write and sign letters, without referring to a common source for approval, it may be important that they each know what the others are doing. One way in many instances is to make one additional carbon of all letters. Those additional carbons are all assembled. Ordinarily it is wise to make some selection among them, since some may not merit reading by others. This file is circulated daily to those interested in such letters. Since there is one for each day, that accounts for the name 'Daily Reader'. After circulation they are frequently filed for a limited period, say a month or 3 months, and then destroyed. If you have a number of people say 3 or 4, 5 or 6, who are each independently signing mail and carrying on correspondence, which it is fully within their authority to do, that device is oftentimes an effective one for mutual information. As we work it in my agency it is a simple thing and does not involve any large amount of extra work. Each typist makes one extra copy on yellow paper for the reading file. All those yellow copies go to one person who sorts them over. I suppose that not more than 1/4th of the letters go into the reading files, because we think it is not worthwhile for the relatively unimportant ones.

Another thing that you ought to think about, particularly for countries that are going to embark upon a resource development programme, is to have basic legislation in your country which enables you to transfer funds from one agency or department to another, in special circumstances. May be you have that already or may be the form of your appropriations are such that you do not need it. Let me give you an illustration. Supposing your agricultural department was establishing an experimental farm and it had to instal an irrigation system. It might feel that the irrigation department could

install that irrigation system more cheaply or effectively than it could. You can think of all sorts of situations in which for relatively brief periods one agency needs skills, which are generally not needed nor found in that agency, but are found in another agency. It may oftentimes be better to engage the other departments to do it on a contract basis.

X Project Construction under Contract

I want to consider now, the matter of construction of physical works under a contract system. I am assuming for this discussion that we are concerned now with a resource development programme which involves construction of some physical work. On an irrigation project you build dams and canals and so on. This is a typical example but it need not be limited to this. It might be electricity distribution or roads or anything else.

GOVERNMENT CONSTRUCTION *versus* CONTRACTING

The first question of course is, should the construction be carried on by the government agencies, directly employing people and carrying it on themselves or should it be carried out by private firms under some sort of a contract? In other words, is your government going into the construction business, or is it going to contract with private firms. There are a lot of factors to be considered in that connection. One of them is, where are you most likely to get the necessary technical competence? Are your government agencies more likely to have the competence that is needed for the job or can you find it in domestic private firms or must you employ foreign private firm? That, of course, is a question to which there is no general answer. It may vary enormously from one country to another and from one type of project to another. From the earlier lectures I judge that most countries feel that they can carry on road construction themselves, perfectly satisfactorily with the necessary skills. But when it comes to certain other types of projects, certainly many countries have employed foreign firms. What about the availability of foreign exchange? You might want to have a foreign firm to do it, but you simply do not have the foreign exchange. On the other side of the picture, although you might decide that foreign firms could do it better than any domestic firm, or that the government could do it better than any domestic firm, still it might be desirable to encourage domestic firms to get into the construction field and therefore, the contract will be given to a domestic firm.

There are a good many factors that might enter into a decision aside from any cost calculations, and these factors might well dominate your decisions. You certainly must be quite familiar with those considerations. Whether it should be decided only on a minimum cost or on some other basis, is a policy decision which may be out of your hands. I think that one of the things that ought to be faced is where are you likely to get the most honest job done? Technical competence is one thing, but honesty of performance is

sometimes something else. Certainly there have been many instances when foreign and domestic firms were not completely honest in their performance.

CHOICE AMONG CONTRACTORS

If you decide against doing it with government employee the question then comes, is there any reason to favour one type of contractor in preference to another? Is there any reason to favour one particular contractor over others? Even if you are going to use domestic firms, you can still sometimes favour one group over another. You may find the necessary skill only in your larger cities. You may offer contracts which in effect may be impossible for smaller firms to accept. On the other hand, you may feel that it is desirable to promote a construction industry in various parts of your country. You may try to get smaller firms and firms in more outlying parts of your country interested in government contracts. These are all matters which may or may not influence a particular situation.

BIDDING *versus* NEGOTIATION

If you do give contracts are you going to call for bids and give the contract to the minimum bidder, or are you going to do it by some form of negotiation? The bidding procedure is effective only if you have a number of potential bidders. There is no point in trying to go through the bidding process unless you do have such potential bidders. Some countries (I would say the U. S. was one of the more extreme examples) have almost a phobia for competitive bidding. Legislative bodies may insist that practically all government business be done by competitive bidding—buying supplies, renting of space, having construction done, or anything of the sort. Frequently it is a lot of nonsense. If you are trying to rent office space in a city, where you can find only one possible office building, it is a lot of nonsense to go through a competitive bidding procedure. There is a feeling on the part of many legislators that this procedure insures honesty, but if you want to favour one of your friends, you can often find ways to do so.

You can have a carefully conducted programme without competitive bidding. If you are dealing with a situation where there is no hope of getting more than one bidder, where at the most there is one possible firm that can do the work, usually bidding is a lot of nonsense. On the other hand if there are a lot of firms, particularly if the jobs are small, it may be well worth while to let them bid. You may get better prices and certainly that is one of the ways of letting the forces of competition work. The other alternative is called a negotiated contract. You correspond with some firms and work out the basis for contract and by negotiation settle it.

You may include certain restrictions in your contracts. For instance, particularly if you allow a contract with a foreign firm, you may specify that a certain percentage of the labour or certain types of labour must be domestically recruited. Even if you give it to a domestic firm, you may insist that certain types of labour be locally recruited. Of course, whenever you

do that, you are probably adding to the cost of the construction and certainly you are imposing an additional requirement which most contractors would prefer not to have there

PREPARATION OF SPECIFICATIONS

An important part of any construction is the preparation of detailed specifications. Although this comes up most clearly in the case of contracting with private firms, if construction by government agencies is to be satisfactory, you probably need detailed specifications for them too. Otherwise there may be a lot of confusion and waste. You may remember that in an earlier lecture I talked about the steps necessary to translate general plans into action. One of those steps is oftentimes the preparation of detailed specifications. I brought with me and put into the library, several copies of specifications on various projects. One is for a small water storage tank for livestock watering purposes, involving 24 cubic yards of concrete. It is located rather distantly from a town and that probably will add to its cost. Here it is indicated how the specifications were drawn, the bid was invited and accepted. Then I have here as an illustration the specifications of the Kortess dam and power plant. This involves a total expenditure of about 5 million dollars. I have also a number of others which are larger. Here is also a publication of standard specifications for canals. Some of you may be interested in part of this material showing in great detail the specifications for dams and other works. I also have a few sets of material where the specifications relate only to the sale of timber. I am going to put all of this material in the library and I hope some of you have an opportunity to read it.

Specifications must be drawn up in considerable detail. At the same time, there are frequently situations which require adjustment as you go along and those must be either covered in the specifications or some other arrangement must be made for dealing with them. Detailed specifications accomplish three broad purposes. In the first place, they clarify and make specific your own ideas. The preparation of detailed specifications is a wonderful opportunity to discover any flaws in the planning of your project. In the second place, the detailed specifications are necessary if the contractor is to carry out the job properly. How he is going to know what he is supposed to do, unless he has detailed specifications? And lastly, they are necessary as a means of holding your contractor to do the job as it is supposed to be done. Detailed specifications are nothing more than an agreement between you and the contractor—what he is going to do and what you are going to pay him for—He must know this, if he is to know what he is going to do. We are later going into the question of inspection and supervision of his performances.

The form in which the specifications are drawn may oftentimes influence the ability of different groups to bid or to participate in the construction. Taking an extreme case, if you specify some make of machinery, which is available only in certain places or with certain firms, you make it pretty difficult for anyone else to bid. That is why I said earlier, bidding can be of help in many situations but you can draw bids in such a way as to largely

determine the bidder. If you are determined not to be honest about it, you could still employ anyone you chose. But leaving out such extreme cases the way in which the specifications are drawn may influence the possible choice among the contracting firms.

AMOUNT OF WORK IN A SINGLE BID

Closely related is the question of how much work you include in a single bid. In building a very large dam, you must excavate the waste material on top of the bed rock, then you get down to construction of the dam, the construction of the power houses, the installation of the apparatus, the building of the transmission lines, and building of the canals. If you would let all that in one huge contract, you obviously make it impossible for any small specialized firms to participate. You have automatically excluded from consideration anything but large firms of very great financial resources, good engineering resources, good experience and the best of skill. At the other extreme you might split up the job into a large number of small parts, either on the basis of the particular skills which are called for or on the basis of the size of jobs which would be within their financial resources.

When we started building some of our biggest dams, 25 years ago, more specifically when the Boulder Dam was started in 1928, it was extremely difficult to get any contracting firm interested in doing it, because it was a project of such magnitude, that the possibilities of loss were such that it could wipe out even our largest construction firms. They might have done a good job, both technically and financially but incurred some losses of a small percentage—and still have been wiped out completely. As a matter of fact, in the end it was not one firm, but six large firms, which combined their resources to do the job.

Sometimes it is impossible to cut a job up into small pieces. If you are going to build a large dam, it may be impossible to subdivide the job into small parts. You may then have difficulty in getting any one firm or perhaps any combination of firms that can handle it. In that case it might have to be a government job. On the other hand there are oftentimes many small jobs around the project, which could be given to small firms. Such a little job as an excavation for an office, not even the erection of the building itself, might be given to some local contractor or such things as building a fence to keep people or livestock out of particular areas—all sorts of little jobs, can be split off one big one.

If you do split it up into a number of smaller jobs, then of course somebody has to be in the position of co-ordinating those various small jobs. If you let it as one big job, then the contractor has his problem of co-ordination of the various parts. Ordinarily your specifications involve, among other things, a time schedule. But those time schedules have to be fairly flexible. Most large construction projects probably require 2 or 3 years or longer to do the construction. The timing within which specific things were done, must of course be varied accordingly. You may give one sub-contractor a much more limited time or tolerance of doing his job. The co-ordination of one small contractor to another is oftentimes a headache, and one of the reasons why

many countries prefer to utilize one contractor. To some extent you can get the same thing by dealing with one contractor and either specifically providing that he sub-contract to others or at least not prohibiting him from sub-contracting. If he wants to take on the entire job and in turn sub contract some parts of it, then he can be free to do so. In that case, he still retains the co-ordinating function of the job, but the work may be done by someone else

In general in the U. S. the practice is fairly common of including your specifications as part of the bids. In other words, we invite bids or tenders and we publish the specifications. That is, we may not publish them in a magazine or newspaper, but we make the specifications available to the bidder, so that he knows what he is bidding on. We include those same specifications as part of the contract which is finally given to him. He has bid on a set of specifications and they become part of his contract.

INTERESTING POTENTIAL CONTRACTORS

If you are going to let bids, you are interested in trying to get every potential contractor and potential bidder interested to participate. How do you go about doing it? Advertising in newspapers of course is one of the ways. I see in the daily newspapers here, requests for bids on materials that the government wants to sell. In many instances it is desirable to build up a special mailing list of potential bidders—people who want to be considered whenever a bid is called for, and who do not want to look in the newspapers. If there are a lot of different newspapers and a lot of government activity going on, that may not be the most efficient way for things to be brought to their attention. Some agencies maintain special mailing lists of firms and individuals to whom they will send material about potential bids. In some instances, just word of mouth advertisement may be effective. That may be particularly important for small scale jobs, relatively unskilled jobs. If instead of direct employment of labour, you prefer to contract for relatively small jobs, some of the people that might be interested may not pay much attention to the newspaper. Just informal discussions may be an effective means. For very large projects, as discussed at our last lecture, it may be difficult to get any one interested to bid. The size of the project may simply frighten them all and you must find potential bidders in some other way than by advertising. It may call for a good deal of personal contact work, personal interviews, personal solicitation. When that is true, it raises a lot of question about the wisdom of bidding at all. If there is not more than one, and even if there are not more than 2 or 3, possible bidders, why go through the bidding process? Why not just go straight into a negotiation with potential construction firms? But as I brought out previously, there may be in your country a strong legal requirement or a strong practice or a strong custom of calling for bids, even when it is fairly evident that the bidding process is not going to produce favourable results.

Under some legal systems, the material that goes into the advertisement becomes a part of the contract. If that is true, then that part of the advertisement must be drawn with considerable care, so that when it is in the contract, it covers the essential points. I have noticed in many countries

what I call the informative type of advertisement, which merely states that the government is interested in buying something or that the government wants something constructed. For details, you must write and get specific information. Under those circumstances, you have no problem at all, because it has no legal significance, it is merely an informative advertisement.

BIDDING PROCESS

If you do decide to request bids, then it is important that the bidding process be carried on as efficiently and carefully as possible. After all, the purpose of asking for bids is to give potential construction firms an opportunity to compete. You want to be sure that the bidding process really carries that out, both in terms of scrupulous honesty in the matter and also in terms of having the process such that any potential bidder can actually bid. You will get always some difficult questions to decide. For instance, suppose you set a time limit on the receipt of your bid and somebody comes in with a bid a little late. Are you going to accept it? Of course, legally you should not, and I think in general you should not. But supposing that you got no bid except the late one, which seems to be a perfectly satisfactory bid. Are you going to waive the time limit or are you not? The method of carrying on the bidding should be as carefully devised and as scrupulously adhered to as possible. You can use either written bids or oral bids, but ordinarily for large jobs we use only written bids.

Question—Suppose you have reason to suspect collusion among the bidders, what do you do then?

Answer—Our advertisements asking for bids always give us the right to reject any and all bids. Even if you have only one bid, you might reject it; or if you have several bids, reject every one of them. There have been many cases in which that has happened. When we are selling products we have an appraised price. We say in the advertisement, this is the appraised price and bids for less will not be accepted. Ordinarily when we are calling for bids for construction jobs, we have an estimated cost upon them, but we do not publish that. But if the bids then are all much above that, we may reject them all. I know of instances where the Bureau of Reclamation has rejected all the bids, because they were too high.

Sometimes you have a construction job with several new features to it and possibly you have no private contractor who has had experience with such work. So the private contractors to protect themselves against possible difficulties, put their price pretty high. If the government agency feels confident of itself, it may say, we can do that job ourselves. This is one of the reasons why I think agencies should not universally adhere to a bidding procedure. I understand that in some countries, in effect government agencies are permitted to bid. In other words the construction department of the government agency or the construction department of another agency is allowed to put in a bid. If they say they can do the job for a lower figure than any private firm then the contract may be given to them.

Suppose you were selling a piece of timber from the government forest in a situation where damage will occur unless the trees are cut promptly.

You must sell it within a limited time. You get a single bid which is less than your appraised price. You could reject it, but then you stop and think it all over—you did not get anybody interested in this and in 3 or 6 months the wood will be quite worthless. It does not look as if there is much chance to get any one else interested, perhaps you should change your mind. So it is even conceivable that you would accept a bid at less than the appraised price, although you had the legal right to reject that bid.

If oral bidding is permitted, that must be dealt with carefully. The usual system is to let the bidders bid against each other, until you get to a maximum bid. That is not the only way in which you can conduct a competitive bid. In some instances the bid is started at a high price and gradually lowered till some one will take it. You start off with a high price and then you gradually lower it, till the first man who feels that he can pay that price accepts it. That is a potentially competitive situation. Any one who has participated in oral bids, knows that sometimes you can get some dramatic situations. On the other hand sometimes oral bidding is a complete failure because you have only one bidder. If you anticipate that is going to be the situation, it is better not to have an oral bid. On many of the big construction jobs, dramatic situations develop where the size of the job was very large and the final bids were nearly the same. I know many a company which loses wishes it could have a chance of a second guess. They figure on a profit margin and may be they will be willing to take a little less profit and still have the job.

Question—What should you do in case the bidder fails to complete his contract?

Answer—You may have a more extreme situation than you anticipate. Supposing he bids and you accept his bid. Then he says "No, but I have changed my mind—I looked at that situation a little more carefully and I am afraid I will lose some money. I thank you, I withdraw my bid." In most instances it is desirable to require a deposit of some kind with the bid. He must deposit a percentage of the bid with the bid, which is forfeited if he forfeits the bid. In case of oil leases, it is 20%. Small timber sales have a high percentage and large sales have a lower percentage. We require some sort of a deposit with the bid—earnest money or whatever you want to call it. In addition to a deposit on the bid, we ordinarily require a performance bond. If he does not perform up to standard, based on inspection, that we are coming to later, then the performance bond may be forfeited. You can collect against the bonding company.

FORM OF CONTRACT

In most contracts it is desirable to put in various provisions for adjustments, under certain extreme conditions. But the more such conditions you put in, the less meaningful becomes your contract. After all, the essence of the contract is its definiteness. There are risks involved in any enterprise, to the government and to the private operator. What you are doing by the contract is in effect passing the risk to the person who takes the contract. Part of his profit is from absorbing that risk—all sorts of

risks, risk of the cost being higher than he anticipated or unexpected bad events or anything of the sort. And to the extent that he appraised those risks in his bid, you paid him for them. The contract may include provision for adjustments due to so-called "Acts of God" or things that were beyond his control. But to the extent that it does include such provisions, it is no longer really a contract.

In general a contract should include all the detailed specifications on which the bid was based. We ordinarily incorporate his bid and the contract may include various other things, such as performance bonds and the like. It certainly should include whatever arrangements you are willing to make about adjustments. If you are going to have a contract and say to the bidder, no matter what happens, you are stuck with the terms of this contract even if it means bankruptcy, that ought to be understood at the beginning. On the other hand, if you are going to make adjustments because the amount of the work is greater than anticipated or the difficulty was greater or because of unexpected events, that also should be understood at the beginning. Otherwise you will have misunderstandings and possibly lawsuits. If you are thinking of future work and you are trying to bring in private contractors for a construction industry, then you want to avoid misunderstandings. A contract need not be in terms of a total amount, but it may be in a rate per unit. You may agree to pay so much per cubic foot of excavation, etc. The total payment is automatically adjustable to the size of the job. But certainly there ought to be the fullest possible agreement in advance of how you are going to handle emergency situations.

The contract between the government and a private contractor is the agreement by which one agrees to do certain things and the other agrees to pay for them. As such, its importance can hardly be over-estimated. It should contain all the detail that may be necessary at any later date. This should include as a minimum the specifications upon which the bid was made, and also any provisions necessary for the carrying out of the contract itself. For instance, if adjustments are going to be made in the contract under any conditions, those conditions and the kinds of adjustments should be spelled out ratherfully and very carefully. The government may wish to retain the power to make adjustments in the contract, or it may be willing to grant adjustments of various kinds to the contractor. Whatever it may be willing to do, should be spelled out in detail. A lengthy and detailed contract is often criticized for its length and detail. A shorter one may look simpler, but if a difficult situation arises, the longer one may actually prove to have been the simpler in the long run. A definite agreement in advance will go far to elimination of misunderstandings, lawsuits, and bitterness later. The contract should also include provision for a performance bond, if this is considered desirable, as it usually is. It should also contain whatever system of bonuses for early completion of the work, or system for penalties for late completion of the work, that seem reasonable and desirable.

The contract should also contain definite provisions for its own termination. The contractor will want to know at some date that his responsibilities have all been fulfilled, and the government will want to know that its

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obligations have ceased. Termination of the contract should be by some definite written procedure, and not left vaguely or to oral arrangement. It must ordinarily be preceded by an inspection of the work, to be sure that it is satisfactory.

In many contracts, it is necessary to make payments to the contractor during the course of the construction work. The contractor may not have the financial resources to carry the job to completion, especially if it is a large job, unless he can get some advances during the course of the construction. There may be no reason why the government should not make such advances, and in fact there may be the advantage that its expenditures are spread over the years or months that the construction is under way and do not pile up at the end. However, if advances are to be made, precautions must be taken that they are not made in excess of the amount earned. Otherwise, the contractor may find it more profitable to default on his contract and not complete it, especially if the performance bond was missing or too small. If advances are to be made at all, they must be made promptly. Otherwise they are of no value to the contractor. If he has to wait for six months or more to be paid an advance, it may be of little value in meeting his current financial problems.

SUPERVISION OF CONTRACT OPERATIONS

Any contract must be properly supervised. One can never assume that a contract will be carried out satisfactorily without supervision. To enter into a contract and then not to supervise it is about the same thing as to make a plan and then not follow it. In some ways it may be worse, for the contract is likely to mean the expenditure of more money than the making of a plan that was not followed. Supervision is necessary to insure that good work is done and that value is received for money spent. Ordinarily the supervision is carried on by government employees, but it may also be done under contract. Some large engineering firms provide supervisory services under contract, ordinarily at a fixed percentage of the amount of the contract. Unless a government agency is equipped to do a competent and thorough job of supervision, it will often be well advised to have the necessary supervision performed under contract. But if it is in a position to do the necessary supervising itself, then that is usually preferable to the use of a contract supervisor. The latter, no matter how competent and honest, does not have the same interest in the job that your own people should have and ordinarily do have.

(a) Kind of supervision

The kind of supervision that should be employed will depend upon the nature of the work under contract. The objective should be supervision sufficiently thorough to ensure that the essential features of the work have been carried out properly. Supervision falls into two major kinds: process, and end results. A good example of process supervision is supervision over the mixing of concrete. If the resulting concrete work is to be fully satisfactory,

then the mixing must have proceeded according to formulæ. It might be too late to discover that poor work had been done, when the job was complete, or it might be too late to correct it. For some types of work, supervision or inspection at the end of the job may be fully satisfactory. For instance, if we have a fence built to control livestock, ordinarily it is fully satisfactory to inspect the job at the end, rather than to supervise the process of building the fence. Sometimes the two types of inspection can be combined. For instance, it might be necessary to supervise the laying of bricks in some piece of construction, but the bricks themselves could be subject to inspection after completion, perhaps at the time they were delivered to the place where laid. If they were defective, they could be rejected at that time. The essential consideration is to find a critical place in the construction process, and to focus inspection at that place. Such a critical place should be one where, if mistakes are made or poor work is done, the results will be serious.

(b) *Frequency*

The frequency with which inspection and supervision should be carried on will also depend on the type of work under contract. Inspection may be continuous, as in the case of concrete mixing on a large construction job. Such inspection would be too costly on a small job, and it might not be necessary. Inspection might be at frequent and regular intervals, as once a week or once a month. If there is reason to think that the contractor might do good work only when inspection time was at hand, then the inspection might be at frequent but irregular intervals. It might be at either regular or irregular intervals but rather infrequently. For instance, a small construction project might be visited only a few times during the course of construction. Inspection might be delayed until the job was completed. It then becomes one of end results, not of process. As in the case of the kind of inspection, so should the timing of inspection be geared to the critical times or dates during the construction process.

The inspector should ordinarily make brief but reasonably complete reports in writing after each inspection. If he has discussed some matter with the contractor and an agreement was reached, a brief report setting forth the nature of their agreement should always be made. These inspection reports need not be long and they may be written by hand only, not typed. They form an important part of the record on any construction job and should be preserved at least until the job is finished and the contract terminated.

(c) *Personnel*

The personnel making the inspections is an extremely important matter. No inspection is better than the personnel that makes it. There are two major factors involved — their competence and their integrity. The inspector must be sufficiently competent to know when work is up to standard and when it is not. He must also be able to distinguish between what is important and what is not. An inspector who follows the letter of contracts too literally and in too much detail can lead to bad working relations.

with the contractor and in the end to perhaps poor work. The contractor will often want him to allow some deviation from the strict letter of the contract. It may be that the deviation will not lower the quality of the work and that it will materially help the contractor, in which case it can perhaps be allowed. But on the other hand, it may be just that vital part of the job without which the quality of the work would be seriously lowered. If deviations from contract are allowed, they should by all means be put in writing, so that precisely what was agreed to will be known by both parties and so that future misunderstandings will be avoided. Every contractor will always seek to get approval of the cheapest work that he thinks will meet the terms of the contract, for in that way his profits will be the greatest. It is the inspector's job to see that this work does meet the needs and the terms of the contract. Competent personnel will command the respect of the contractor and his staff, and good working relations are likely to develop. Incompetent personnel may fail to catch poor work and often may lead to difficult working relationships.

At least as important as the matter of competence of the inspecting personnel is the matter of their integrity. The inspection staff must be above question as far as their integrity is concerned. This means not only the selection of thoroughly honest men in the first place, but necessary steps to protect them against unreasonable temptation and unreasonable pressures. An administrator has an obligation to protect and help his men. Rotation of assignments, occasional spot checks upon the inspectors themselves, and strong support of their decisions, when they are right, are some of the major means of protecting their integrity.

The inspector on a job must have authority to stop any operations on it which in his judgment are not up to the terms of the contract. Ordinarily, when an inspector finds something which he thinks is not up to standard, he asks the contractor to correct it. If it is fully corrected, the matter may stop there. But if the contractor refuses to make the necessary adjustment, then it may be necessary to bring the whole operation to a stop. If he does not have the authority to shut down the operation himself, then some mechanism must exist whereby the matter can be brought to the attention of his superiors promptly, and they can act.

Shutting down a construction job is a serious step to take. In a contract the contractor agrees to do certain things and you agree to pay him for them. If you stop the operations under the contract, either temporarily or permanently, he may bring suit to recover his part of the contract. You have to be prepared to prove, if necessary to a judge, that you were fully within your rights in the contract. That means not only that your action was correct, but you have the necessary documents to prove it was. That is not always the same thing. You may have done something soundly, but you may have inadequate records to prove it. When an inspector discovers something going on that he thinks is thoroughly unsatisfactory, he had better have a heart to heart talk with his boss at an early stage, because it may lead to serious consequences.

For some types of work it may be necessary to audit accounts. Ordinarily it is none of your business what the contractor is spending. All you are concerned with are the physical results of the project — whether the costs are high or low has been his business. But cases may arise in

which it is necessary to audit the accounts concerned. Technical competence is required to know whether the accounts mean what they purport to mean. It is possible that accounts may conceal as much as they reveal. An auditor of accounts must see and unearth any possible frauds.

I have discussed this matter of contracts at some length, because in many instances, that has been the weakest part of resource development.

As we saw earlier, in a great many countries a lot of planning has been done, but nothing actually was ever done as a result of those plans. Plans were, therefore, next to useless. Now by the same token in a great many situations, the plans are made and contracts are let but the actual performance was not up to the contract. Inadequate performance on contracts is common indeed in many situations. I think in our country and in England, in earlier periods one of the great frauds was in the war time, when men were given poor food and yet the government paid well for it. So far as I know that was absent entirely in the Second World War. I think that no country should assume that a contract, whether domestic or foreign is going to be carried out perfectly, unless it is carefully supervised. A natural tendency is for a contractor to try to operate the cheapest possible way. That is perfectly legitimate as long as the results come up to the level that you have decided are necessary. But he is going to resolve every question in his favour, no matter how honest he is, and some of them are not going to be completely honest about it. So the inspection of construction must rank on a par with good planning. Like many other things about administration, that sounds simple, but also like so many other things in administration, it is not observed in practice.

XI Contracts Involving Repayment to the Government

In discussing this subject, I am going to use illustrations largely drawn from irrigation development. I think that makes one of the best illustrations. But the same problems are encountered in the case of hydro-electric power, or for that matter steam power plants, or in the case of any industrial development, or for an agricultural credit programme, a marketing programme, a health programme, a road construction programme, or anything else.

ADVISABILITY OF DIRECT CHARGES

The first question is, should you make any charge? Should you simply pay the costs out of general national revenues of the country or should you make a charge against specific individuals? Dr. Singer has pointed out in earlier lectures that from many points of view it does not matter. In either case the country pays for the project, and the country as an economic entity receives the benefits. For some purposes, the question of repayment is not particularly important. The two broad alternatives are payment by the beneficiaries or the direct users, and payment out of general taxes. Of course taxes themselves may be especially directed to beneficiaries so that you may be making your charge in the form of special taxes or they may be just general revenues.

(a) Repayment not required

Let us take up the case where repayment is not required. What are the advantages of such a programme and what are the disadvantages? Perhaps the most important advantage of no direct repayment is its simplicity. When you build a road, you may say this road is free to everyone. That is a lot simpler than if you should decide to collect some form of a charge. Where most of your vehicles are drawn by animals, I do not know how you would collect charges. You might put up toll-gates, but the problem would be extremely difficult and the costs would eat up any revenues. If you build your roads primarily for motor traffic and your motor vehicles consume fuel, you can levy your tax on the fuel, directly. Take the case of a health programme, the spraying of D D T and what not — how are you going to charge the beneficiaries? So the advantage of not trying to raise any money by direct charge on the beneficiary is the simplicity of the programme. As I said earlier, after all you are interested in the national benefits, and if the national income has been raised, perhaps that is all you are interested in. May be you are not interested in taxing that income directly but in raising revenue in the form of general taxes.

I suppose another way of saying the same thing is that the benefits are so diffused that it is difficult to measure the extent to which any one person has benefited. If the incidence of malaria is reduced because of an area control programme, whether it is D D T spraying and what not, it would be difficult to put your finger precisely on the individuals who have benefited and the amount to which they have benefited. A flood control programme is somewhat the same thing. The flood that covered this place a few months ago certainly damaged a lot of people. It not only damaged the areas that were flooded, but it interfered with the business in the towns and other areas which were not physically touched. A flood control programme to reduce the flood hazard would benefit a large area and the benefits would be highly diffused.

As to disadvantages of collecting no direct payments, I would put as the first consideration the fact that the benefits may in fact go to a particular group, which either does not need it, or for reasons of social policy you think should not be particularly favoured. Again take the case of flood control programme — possibly your floods are of such a character that only certain areas were damaged. You may have a river plain where the flood damages occur, and the higher bench lands are not damaged. The river bottom is not now fully developed. You carry out a flood control programme and it is the owners of that bottom land who are benefited. You can fairly accurately put your finger on just who is benefited. If you do not make any charge for that flood control, then you have in effect given a national subsidy, may be a substantial subsidy, to the owners of that land. You may in turn recapture some of that by means of general taxation, but you may not. Of course it would depend on who owned that land and whether you want it to give him such a subsidy or not. I know of many instances in which individuals have received substantial subsidies from flood control programmes. Supposing you develop part of a port at government expense, which benefits one firm or two or three firms — you give them in effect a large national subsidy.

The second disadvantage of requiring no payment back from your beneficiary is that your taxation system may not be devised to capture any added income. You may carry on a project which benefits your national income and yet your taxation system is such that if you raise the necessary funds through general taxes you are only going to get a small part of it back. Therefore you are putting a large burden upon the national treasury in spite of the fact that you are adding considerably to the national wealth. If you are able to identify those people and devise a system to capture part or all of the benefit to them, that may be one of the most effective ways of raising the money.

There is a third factor that I think is important in some instances. If as a result of your programme you are producing a productive factor of some kind and you do not charge for it, you are likely to make an improper use of that factor. Producers use different productive factors in proportion to their costs. Suppose that you make no charge whatsoever for electricity, that is likely to lead to a wasteful use of electricity. If you make no charge for irrigation water or a charge which is not related to the amount of irrigation water used, you are likely to be putting up an incentive for wasteful use of the water. This not only does not produce anything, but does positive damage, by waterlogging and the like. If you do not make any charge for the use of a factor you may be upsetting the efficiency of subsequent production. That would probably be less true for something of a general character such as roads, schools, and medical services than it would be for something of directly productive character such as hydro-electricity, irrigation water, or products of factories.

(b) Repayment required

Let us consider now the other approach. Suppose you require full repayment of your cost from the direct beneficiaries. What are the advantages of such a programme, particularly from the administrative point of view? Perhaps the most direct advantage is, that it is one fairly sure way of producing some income for your national government. I am assuming now that there are really advantages from the project, otherwise you would not have undertaken it, and that those advantages are clearly accruing to certain individuals. In the case of an irrigation project, they are the farmers who are going to use the water. If you require a payment from them to repay the cost of project, you are raising some revenue for your national government. It is true, of course, that your taxation system might raise the same revenue from the same people. But it is quite unlikely that it would be in the same proportion from the same group. That is first of all an important advantage that it does raise the revenue which your national treasury may need.

The second advantage is the reverse of requiring no payments, i.e., if you put prices upon productive factors, which reflects their cost, you are probably going to get a more economic use of those resources, and a more economic combination of them with other resources than if they are improperly priced. That will have its effects on the national economy. If electricity is free you will waste it. I might say that where

I live in Washington, the rent that I pay includes the electricity. I know that I waste a great deal of electricity for the simple reason that if I do not turn something off, it does not add anything to my costs. Charging for a resource may lead to the optimum combination of resources, or to maximum efficiency in its use.

The idea of charging for the resources that are created has a certain popular appeal, as being a form of at least rough justice. If you embark on a flood control programme at some large expense and it rather clearly benefits a certain group of landowners, at a cost which has been borne by your entire public, there is likely to be a justified feeling that injustice or favouritism has been practiced. Conversely, if you make a charge for it, your public is likely to feel that it is a fair arrangement. There may be also a political appeal in so doing. May be it will not be true in other countries, but I am sure in the U. S. that our Federal irrigation programme would never have had the political support it has had, if we had not required repayment of the construction costs from the users of the electricity and the users of the irrigation waters. In our country, irrigation is confined to the least populous part. The bulk of our political leaders come from an area which does not have irrigation, and is not interested in irrigation. They are willing to accept it only because other parts of the country urge it and because of the argument that the federal government only advances the money which is repaid.

Now, as to the disadvantages, particularly from an administrative point of view, of trying to collect back from your beneficiaries something like the full benefits or the full costs of the project. First of all, it may be difficult administratively to do it. The details that you may have to go through may be very great. As good an illustration as I can think of is roads. If you build a road and you attempt to collect back from the people who use it, the costs and the difficulties of so doing might be great. You would be collecting small sums from a large number of people. For the type of project where the benefits are diffused, as roads or education or health programmes, it may be difficult administratively to collect back anything. We have been going through a similar experience in the U. S. in recent years. Some of our legislators urged that charges be made for recreational use of public land. Where it has been tried, we found that under the best of circumstances it costs as much to collect as you can get out of it, you have no net revenue left and under many instances it would cost more. Under some circumstances you may rightly estimate that there is a real benefit to the public from the project development in terms of satisfaction and increased welfare. But it may be practically impossible to collect anything out of it.

I have said that if you do not put a price on things, you may lead to an improper use of resources, but sometimes you may want to change the use of resources. You may want to break down some old custom or some old attitude. You want to induce people to use things differently and therefore you do not want to put a price on it. For instance, certain health measures. You want people to use them and even if it were for other reasons practical to put a charge on them, it would be undesirable from the point of view of inducing their use. The same thing is true of schools. If you set up a system of schools and charge for attendance, that would defeat the very purpose for which you are doing it.

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In these examples we are more or less getting over into other fields than administration. But in every instance, the question of whether to make charges or not against the beneficiaries has a lot of administrative aspects, in addition to considerations of national policy. You must always consider the question of administration of the project under two alternatives of repayment or no repayment.

COLLECTION OF REPAYMENT

Let us now assume that repayment is expected from the beneficiaries of the project, and then consider some of the problems that will be encountered. First of all—how are you going to collect it? Sometimes the simplest thing is to collect directly from each individual. You might sell raw land at a price which included the cost of providing irrigation or you could have some sort of a system of annual payment from the irrigation farmer directly to the government. Those payments could be in the form of special payments or they could be in the form of a part of his tax. In many respects it would be immaterial, but the way in which it was calculated and the way in which it was collected might differ. That has a great many advantages, because presumably you know who the beneficiaries were and you are going to have some direct contact with them any way. You presumably can estimate the amount of their benefit and collect it directly from them.

On the other hand, in many countries, it is customary to deal with irrigation districts. You encourage the users of your resource to form an association of some kind, encouraging them or even perhaps forcing them to assume a measure of responsibility with regard to the project. In many countries they will want to assume such responsibility. In others they may reluctantly take it on, but you may for one reason or another prefer that they do. There are several advantages in doing that if the district is capable of managing its own affairs. For one thing, from your point of view, you may deal then only with one user rather than a thousand or more. The type of contract or the type of relationship for that one user may be more detailed and more involved, than with the individual user, but it still may be a lot simpler to deal with one than with the large number.

You may require the association or group to assume a joint liability for their obligations. In other words, if one of their number defaults or does not make the payment, then the others are liable for the total. That is our practice in the U. S. with irrigation districts. We enter into a contract with the district. The total amount of the obligation to the federal government is a joint liability of all the landowners within the district. None of them are free from an obligation for repayment until all of them have paid. There is thus more likelihood of getting your total repayment. Now that may or may not be a particularly important matter, it ties back to this matter of requiring repayments.

In many instances the national government does not want to get into retail business, whether it is retail distribution of irrigation water or retail distribution of electricity or other retail businesses. They want to turn those obligations over to some sort of a local district. These may be irrigation

districts, or electric distribution districts or other types of districts. Their legal powers will depend of course on the laws of your country. If they have taxing authority, they are in effect units of local governments. In the U S the irrigation districts are formed under a State Law and ordinarily, they are formed by an election of qualified people within the district. The qualifications may be either ownership of land or residence within the district or both. In California for instance, an irrigation district must be formed by a majority vote of both the land and the people. You must have a majority of each. But once formed it is a unit of local government with taxation and other legal powers. They can foreclose for non-payment of charges and all the rest of it. They manage some substantial enterprises—borrowing money directly and constructing dams and distribution systems and the like.

There has been a long history of that sort of thing in most states of the U S, before there was a federal irrigation programme. I know the same thing is true in many other countries. I understand that in Italy for instance something like 250 irrigation districts have been formed and that many of them have carried on substantial programmes without help from the national government. Now it is true, at least in the U S, that many of them have been very poorly run and there have been many failures. The record of repayment to private investors has been bad in the U S. I might say that at one stage we extracted large amounts of private capital from English and Scottish sources into our private irrigation development, most of which was not repaid. That is one of the ways of getting economic development for your country and not only shifting the burden from the present, but shifting it away entirely. I do not recommend that.

An irrigation district may be formed ordinarily with a vote from the people within it and sometimes requiring some sort of court action. It has substantial legal authority from then on, to levy taxes, to collect revenues to expend them, to enter into contracts, incur future obligations, and all sorts of things. Again, this is the sort of thing that depends a great deal on the institutions and attitudes of your country. For various reasons it may be desirable to encourage democratic government at local level and to push things away from your central government. Such local districts can be an effective means of doing so. On the other hand, if there is not the competence to do it or more particularly if there is not the interest and the desire to do it, you may only be adding to your headaches.

In general, the most important matter is the taxing ability of such a district. If it is a purely voluntary group, that has no legal authority to compel any one to do something, then it cannot enter into a firm contract agreeing to repay an obligation. An association or district which depends on voluntary co-operation could not enter into a firm contract to repay because it could not deliver in the event that its members were unwilling to pay. The government agency would be unwise to enter into a contract with such a group. So I think the requisite is that the district or association have taxing authority. If it has that it can impose a burden on the people who are benefited, whether they wish or not. Then you might safely enter into a contract with it. Now I say whether they wish or not. I am assuming that the majority do want to enter into this sort of an

agreement with the government, but there will always be some minority, that are willing to get whatever advantages there are without being willing to assume their part of the obligation. I am also assuming that your national government has the authority to collect taxes from the beneficiaries, through land taxes or otherwise

Question—What is the best size of irrigation districts and what improvements are they authorized to undertake?

Answer—In size they can and do vary enormously

I know irrigation districts that have as few as 10,000 acres and I know other districts that have 300,000 acres or more. The very small ones are generally not desirable. They ought to be large enough to have some minimum adequate, competent professional staff. They certainly will need an engineer in charge of operations, and if they are going to carry on any construction, one in charge of construction. They certainly have to maintain some form of an office. If they are going to undertake retail distribution of irrigation water then they must keep a lot of records. So there ought to be some minimum size, which can afford to employ productively the necessary competent professional staff. That would depend in part upon the difficulties of the project and the number of people you are serving and the like. But I will say, at least for our conditions, that any district of say less than 50,000 acres is rather small to maintain a staff adequately. If they get too large, then you have lost many of these advantages of local government. They become just as remote from the average user as the Central government may be and you may have difficulty in getting people out to vote on the elections and all that sort of thing.

There may be other practical considerations. Ordinarily a district ought to have a more or less an entity of physical work. As I understood the project presented to us yesterday that area could very conveniently form an excellent irrigation district—about 70,000 acres and several thousand irrigators. I judge it would be large enough to utilize a competent staff fully. So there is no hard and fast rule on size. They can vary considerably.

Now as to what they undertake, that will depend first upon their legal authority. But assuming that you have a law which gives an irrigation district broad authority, then the only limit is the technical ability and the ability to finance activities. I know many of you have seen some of our irrigated areas in the U. S. A great many of the larger areas are organized into irrigation districts. There are 15 or 20 irrigation districts operating in the Salt River Valley of Arizona. In California, I suppose there must be 100 irrigation. The Columbia Basin project which will irrigate about a million acres has three large districts. Some of the districts have had a successful financial record. There are two in California, the Modesto and Turlock projects, which are frequently pointed to as examples of successful private projects. They build their own storage dams, their own distribution systems, financed them out of private capital, paid commercial rates of interest, and were highly successful. They did not develop hydro-electric power directly. A private company installed the power house and the generators for electricity. They are projects that have completely paid

back the indebtedness and now make a low water charge. Those are the most successful.

Ordinarily districts ought to limit themselves to functions connected with their primary purpose. But that is not always true. For instance, some irrigation districts are now handling electricity. They took on an added function, although they were never formed for the purpose of distributing electricity. But, being in existence and covering the whole area and much of the electricity being used for irrigation by pumping, they rather naturally got into the distribution of electricity. I think at least in one instance the reverse occurred, where a district was formed originally for the distribution of electricity, has now gone into the distribution of irrigation water as well. Many of them undertake drainage activities as well as irrigation.

As many of you know, in the U. S. the whole programme of distribution of electricity to rural areas has been tremendously accelerated by the Rural Electrification Administration. We have in the U. S. private companies for distributing power and also public power agencies. The private companies had generally not exploited the rural market to the full. They had done so in some of the better farming areas, but, 20 years ago, considerably more than half of our farms were without electricity and the costs were very high. The federal government established R. E. A., which is only a loaning and service agency. It does not buy properties nor does it generate or distribute electricity. But it encourages the formation of local co-operatives and loans them money. Some of those co-operatives have their own generating facilities, but more frequently they have bought power at central points both from private companies or from public dams, and then distributed it. I do not know what the percentage of farmers with electricity is to-day, but I am sure it must be over 80%, and the programme will push on forward to cover most of our areas. In general the co-operatives have had a successful record.

Many of the electrical co-operatives are now taking on, or considering taking on, the establishment of rural telephone lines. We have just the one dominant telephone company for the U. S. and it and its subsidiaries have been reluctant to extend into the rural areas. As a matter of fact we have fewer telephones in rural areas to-day than we had 20 or 30 years ago, because the automobile has made it possible to travel easily and consequently people would not put up with unsatisfactory or expensive telephone services. And it has been both unsatisfactory and expensive, in the rural areas. So much of our rural areas do not have telephone services now. Many of the electric distribution co-operatives are considering taking on a telephone system for the same area and for the same customers. It is a very logical thing. They are serving the area, they have then contacts with the members, they have a going organization. If it is the service that their members want, they can extend it rather easily to them.

Those are some examples. This is a matter which ties particularly to your general political philosophy. If in your country you are trying to encourage maximum local government and local assumption of responsibility, then such districts have a great deal to be said for them.

CONTRACT NEGOTIATION

The next point that I would like to raise is, how you arrive at a contract with whoever you do contract? Do you enter into a negotiation, or do you simply say, here is the contract, take it or leave it. Again, that depends a great deal on the political and philosophical climate in which you operate it. In the U S at least and I am sure that it is true of some other countries, these local districts negotiate with the Central government on essentially equally terms. I mean they may say, what you are demanding is unreasonable and we refuse to pay it, or we cannot accept this or that or the other terms, and in many instances they get substantial adjustment of the contract to meet their wishes. Of course, on the other hand, there may be limits within which the government can or will negotiate. If you are the representative of a government agency and operating under a definite framework or law, you obviously cannot negotiate beyond the framework of that law. And if the law says the full costs must be repaid, you must negotiate contracts which do get the full costs, or else the whole thing falls through. But in most instances, there are a good many matters on which negotiation is not only possible, but desirable. After all the essence of negotiation, whether it is negotiation between employees and employer or any other form of negotiation, is for one side to yield what means least to it and most to the others. Sometimes there are things which do not matter particularly to you, which make a great deal of difference to the party with whom you are negotiating and conversely there may be things which you think are quite important, that they do not consider too important. So it is often times possible to negotiate over a contract to mutual advantage. You can come out with a contract which nearly satisfies both. It is rather hard to generalize on all of this because the situations can be so extremely diverse. I am going to come later to some of the things that ought to be in a contract, the terms of a contract, in addition to the price. That is, if it is an irrigation district, how much water and when it is going to be delivered. Many things of that sort can be negotiated to mutual benefit.

The government agencies may be quite severely restricted in negotiation. Of course in the long run the legislation can be modified if necessary. The irrigation or other district may also be limited in negotiation, both by reason of law or by reason of its members ability to pay or by their willingness to accept certain things. As a unit of government it is responsible to its electors, and there are limits to what they may be willing to accept.

One of the questions that may well arise is, when do you negotiate the contract? There is one school of thought which feels that such contracts should be negotiated and completed prior to any expenditure of funds by the central government. If you say, we are going to build an irrigation project and we are going to require payment from the beneficiaries, under this theory you should get a definite contract to that effect before you begin any construction. That is a good theory and in many instances, it would be quite desirable to do that. On the other hand it may also be impractical if not impossible to do it.

If you are talking about irrigating a desert area, which is owned privately but not used for agriculture, it may be difficult to enter into a contract for repayment. It is going to be several years before you get water there, the people to whom you are going to supply the water are not there, and the

present landowners are quite unfamiliar with irrigation. In a sense you give away some of your bargaining power when you build part of the project before you negotiate the contract. But on the other hand you have some thing more specific to offer and the actual final negotiation may be easier at that stage. In many countries, particularly again in the U. S., there have been instances of private companies building irrigation canals and then the landowners refusing to take water and forcing the private companies through bankruptcy and then buying in the whole thing at a forced sale. If there is any danger of any such thing as that, you ought to enter into your contract before construction is begun. But trying to work out a contract for sale of electricity prior to the building of your dam, when it will be five years or more before you can have the electricity to sell, is a pretty difficult business. So the time at which you negotiate a contract with the district would depend somewhat on the circumstances. Preferably, if you could do it it would be better in advance of actually committing yourself to expenditure of funds. But that may be practically impossible.

PRICE OR CHARGE IN A CONTRACT

One of the crucial parts of a contract is the price. How much are you going to ask the project beneficiaries to repay? In part, that decision comes from other considerations, i. e., the general policy decision of whether you are going to require repayment or not.

Many types of resource development are undertaken by Central governments on the arrangement that the beneficiaries repay the cost and only the cost—the government operating them without profit, but presumably without loss. Now if that is the arrangement, then obviously there is not any real negotiation over the price. Even in this case there might be some negotiation as to what features would be included in the project because the costs might be different and because some features might not be worth their cost. But if the legislation under which you operate rather specifically states that the cost incurred by the government shall be recovered and it is also clear that it expects to recover nothing more than those costs, then there is really nothing to negotiate about the price. It is given.

On the other hand, in a great many situations, for one reason or another, you might want the price to be either below or above the costs incurred. The cost of some project might be greater than you feel can be recovered from the direct beneficiaries. There may be indirect benefits that you will not try to recover or you may deliberately wish, as I indicated earlier, to underprice certain resources in order to encourage their use.

It is also conceivable that a government might undertake some resource development and charge more for the resource than it cost them to produce. In that regard I would think that the generation of electricity was one place where the price you charge might not necessarily be the costs that are incurred. In the first place, if it is hydro-electric energy, it is likely to be a multi-purpose project and hence extremely difficult to say what costs you have incurred for the electric development. The costs

are joint for several purposes. But even if you could identify the costs, you might decide to charge different amounts than your costs. In a highly industrialized country like the U. S., one of the greatest incentives to further industrial development can be cheap electricity. We have certain areas where the price of electricity is a small part of an anna, 1/10th or 2/10ths of an anna per kilowatt hour. Many of our electro-chemical industries are based upon large quantities of very cheap electricity on an essentially hundred per cent load factor. But in an underdeveloped country, where you do not have much electric energy, the situation is quite different. There are few industries that you are likely to introduce in an underdeveloped country where the price of electricity is an important part of the financial success or failure of the project. The availability of electricity may be critical, but the difference between 3 as. or 6 as. or even 8 as. per kilowatt hour might be an unimportant part of the financial profitability of the project. Other factors would unquestionably overshadow the cost of the electricity. The cost of electricity for most types of industry, particularly the kinds that are best suited to underdeveloped countries, is a small part of the total. Any conceivable price of the electricity is not going to spell the difference between success and failure. On the other hand in a highly industrialized country where large quantities of electricity are used, the price may be the deciding factor, as to the location of the industry in one region or in another. But even there, the availability of electricity is often times more important than its price, at least within any reasonable range of price.

Under those circumstances I can conceive that some of your countries might rather deliberately charge more for electricity than it costs them. It would still be a cheaper and a more flexible source of power than any other power and, even at a price well in excess of its cost, it might still be a bargain to the manufacturer. A price above cost might be an effective way of raising some revenue for industrial development or further resource development on the part of a government.

Whatever the considerations that determine price, we have a problem of establishing a price in the contract for the resources that you have developed. The price may be a capital charge or an annual charge or a combination. If you have an irrigation project, you may sell the land and water at a capital price which recovers the costs. Ordinarily that is not satisfactory because the people whom you want for settlers do not have that amount of capital. If you want to make a capital charge in the beginning, you might not get any settlers. So, more commonly, a price per year is established which may include an amortization or an interest charge or even in many instances both.

If you enter into a contract for a long period of time, somebody is taking a risk of greatly changing prices. No one knows where the general price level is going to go for the next fifty years. Conceivably economics and public administration have developed to the point where we are going to have moderately stable price levels from here on. One of the reasons why I am sceptical about it is, if you read the economic literature you will find that many people thought that was going to occur after World War I—there were some extreme statements made, in the U. S. particularly.

We had just established our federal reserve system and we thought it would govern the price level by monetary control. Well, all you have to do is to think what has happened since 1925. We did not stabilize prices from either down or up movements. There has never been a 50 year period or even a 30 year period in economic history, I mean, for the last 200 or 300 years, when there has been a reasonably stable price level throughout. So when ever you enter into a contract, that involves payment over 27, 30, 40 or 50 years or more, somebody is taking the risk of a changing price level.

If your contract is for a specified sum of money in total and specified annual payments, then, superficially at least, the person with whom you make the contract is taking the risk. Actually he may not be, because if you got into a period of severe economic distress and he finds it impossible to pay, probably no private institution could insist upon the contract and certainly no government institution can do so, because it would mean bankruptcy of all the people with whom you contract. So actually, whether or not you appear to shift the risk off to the people who enter into the contract, the government still carries some of the risk. On the other hand, if you have entered into a firm contract that involves a specific sum of money, you can be fairly sure that the government is not going to get the benefits of a rising price level. At least, it is most unlikely that they will, because that would involve complete renegotiation of the contract and that is probably politically impossible. I mean people will say we have a contract, we agreed to pay this, we are paying it, why should we be required to pay more.

In some instances the contracts include a sliding scale; in other words, higher payments in periods of high prices and lower payments in periods of low prices. Such proposals are always more popular in a depression than they are in a boom. I have watched them with much interest in the last 20 years in the U. S. Whereas in the 1930's the irrigation people were clamouring for a type of contract which varied their annual payment according to some index of prices, in the last 8 years there has been a great deal of opposition to such contracts, when they have been proposed. It is a fairly simple matter for an economist to figure out a sliding scale. If the price index goes up 1%, the annual charge may be goes up 1% or may be a higher per cent—may be 2 or 3%. In other words the payments may vary more than the price index. But if such indices are adopted, they mean much higher payments in a period like the present. In the U. S. for instance the Forest Service makes a charge for grazing on public lands which is directly proportional to livestock prices. It has produced a good deal of complaint in the last 5 or 6 years, because it resulted in charges about three times what they were when the system was first set up. Livestock prices have gone up a great deal. Some of the federal irrigation projects in the U. S. were built on a programme whereby the user of irrigation water paid a charge per acre equal to .5% of the gross value of crops produced per acre on the project. Charges were based not on his individual farm, but on the project average, if it was a \$100, he paid \$5, irrespective of what the values were on his farm.

Such arrangements and such formulæ have a good deal to be said for them. On the other hand they have a lot to be said against them. One disadvantage is the difficulty of their being understood by a relatively uneducated people. It may also be difficult to get a completely fair formula. For instance, a formula which is based only on gross income, completely ignores changes in costs. While it may do fairly well for year to year variations at a reasonably stable price level, it is unsatisfactory if you have a major upswing in prices such as we have had in the last 10 years. Prices may be 3 times what they were in the 1930's and yet farmers may not be making three times as much net income, because costs have gone up also. If you do have such a formula, there are good arguments for not making adjustments to small changes in prices, because that leads to small adjustments which are confusing. Perhaps it is better to negotiate a price and simply leave the contract open to renegotiation at intervals in the future. In other words to negotiate a firm contract for the first say 10 years, with an arrangement for renegotiation at 5 year intervals thereafter, or something of the sort.

TERMS OF THE CONTRACT

Contracts about repayment, whether for irrigation projects or others, must contain a great many other provisions, provisions about the time and the kind of service and all sorts of things. As I understand the irrigation systems here, water is simply provided in a fixed volume on a rotation basis at intervals which presumably provide for enough water to the farmer. But in many cases, whether it is irrigation water or any other resource, you will want some flexibility in the amounts that are supplied and the kinds and times of deliveries and all sorts of things. That is particularly true if you get your irrigation water supplies fully developed. In other words, if you try to develop the total water on a stream to its maximum, you are going to have some water which is not dependable water. Its value is less, and the way in which it is used should be different.

Some of the contracts that I know include a great deal of detail about maximum volume for the season, maximum amount in any one month, adjustments made if the available supply is less than the demand, and a great many factors of the kind. The situations may vary so enormously that it is impossible to lay down any general principles except that all arrangements ought to be worked out in advance as carefully as possible. If you are going to have a contract of any value, it must be adequate to cover all situations that will arise. Now if you cannot visualise every situation, and you frequently cannot, the contract ought to have some provisions for negotiation or adjustment when situations do arise. If possible you should avoid situations in which the contract provides no real answer and in which there may be serious controversies between the irrigation people and the government.

In many areas, the volume of water is actually measured at the farm, at each farm delivery, by use of weirs and the time of flow. In many of our

irrigation districts and in other countries, there is what is called a modified demand system of water deliveries. The farmer orders his water, and specifies how much water he wants and when he wants it. Now I say it is modified demand because he does not always get it exactly when he orders it, because when you have sufficient capacity to do that, you have a lot of excess capacity in your irrigation system. But ordinarily he can get it within 48 hours, one way or the other, depending on when he orders it. He does not necessarily take it as a strict rotation. Of course that is much more practical on large farms than on small, because you use a larger volume of water over a longer period of time. The actual measurement may be at the farm head gate or more frequently it is in the first small canal leading to the farm. Each farmer gets the total flow of that canal for a period of several hours and then it is shifted into the next farm down the road for a different period of time. You do not actually need a weir at each farm gate.

In many cases, it has been practical to impose a sliding scale of water charges. There is no better way of reducing waterlogging than to have a sliding scale of water charges. The man who uses a lot of water pays heavily for it. For instance, I know an area where the charge was \$2 per acre for 3 acre feet of water. The next acre foot would cost him say 50 cents or half a dollar, the next one after that would cost him a dollar and the next one after that would cost him 2 dollars. This is a steeply graduated scale of charges and so priced that there would be considerable incentive to reduce his water consumption. In most types of farming, it is possible to drastically curtail your use of irrigation water and still get equally good yields, by the use of more labour, through better levelling, and through better control of water. I am not at all sure how practical it would be to do it with quite small farms—2 and 3 acre farms. On a very small farm the flow of water would be only for a brief period and it might be difficult to devise and operate a system of sliding scale charges. But on larger farms the flow of water will be for several hours, so that it is obvious to everybody including the farmer, whether he has used much or little water. Records are kept farm by farm. Where there is a sliding scale of water charges, that goes a long way to keep overuse of water to a minimum.

Question—How is water measured to the farmer, and is it costly to do so?

Answer—On practically all of our irrigation districts, whether they are private or public, or even cases where it is a private company providing water, we have what we call a 'Water Master' on each canal system. There is also a ditch rider on each canal who turns the water from one gate to another. He keeps a simple little notebook in his pocket. He notes in it that he turns into John Jones ditch at 6 10 in the morning, 2 cusecs, then later he puts in the same book an entry that the water was turned off at 10:40. You thus have a volume and a time. That's all you require to calculate the total acre feet of water. It is also totalled up for the year and you know the total used. It is practical and not costly.

It may be that your farmers are more careful than ours. If water is not expensive and particularly if no restriction is put on its use, our farmers invariably use too much. And they use wasteful methods of irri-

gation. For instance, in irrigating a large area, they will have a stream for say 16, 20, 24 hours and they set the stream to run and go off to sleep some place. A lot of the water may run to waste. Whereas, if the costs were high they would either stay awake themselves or hire someone else to irrigate. We have found that in our highest type of agriculture, where water is most expensive, a lot of money is spent in very careful releveling after every drop. That saves a lot of water, and is economic to the farmer if water is costly.

The price incentive scheme may run in the opposite direction, particularly in the case of electric power. After all, as you engineers know better than I, the cost of electric power is closely related to your load factor and to use per customer. You may want to institute a sliding scale of charges for electricity in the opposite direction in order to encourage large amounts per user. As an extreme instance when the Bonneville Administration on the Columbia River first began to sell electricity to industrial concerns and the magnesium and aluminum industries first started coming in, they sold and still sell electricity at so much per kilowatt year, not per kilowatt hour. The price per kilowatt year was \$17½. The buyer was entitled to a kilowatt of electricity for every hour in the year if he wanted to use it or if he used it 50% of the time, it still cost him the same annual amount. In other words the marginal of cost for an hour of electricity is Zero. It is a most extreme case. It was a terrific incentive to the electro-chemical industries. I have forgotten the number of kilowatt hours that go into a pound of magnesium, but it is very high. The agency was bidding for those industries and it got them, as a result of that sort of pricing.

But the common practice in the U S for household and other uses of electricity is a sliding scale. For most household electricity, the first 50 kilowatt hours sell at one price, the next 100 at a lower price, and so on down. And in your home for instance, you always know that if you run around and turn off all the lights, your saving is only the last hours and they are the cheapest hours. So as a result people use large quantities of electricity because they have this incentive price to use it. It is profitable to the companies because their cost depends upon the use per customer. In many of our agricultural areas, a certain charge is made for each horse power of connected electricity. I mean if you have a pumping motor, say a three horse motor or whatever it is, you pay a certain charge, which is based upon that horse power, irrespective of whether you use an hour of electricity or not. And then you start off with a much lower schedule of electricity charges per hour of use.

The possibilities of variable prices in any resource you make available are really considerable and ought to be explored and followed up carefully. By means of a price schedule you can provide incentives to use more or less of a resource and yet have as flexible a system as possible. Perhaps for your farms such a system is utterly impractical. I do not know. But it has worked successfully with us, because it gives the farmer the maximum of freedom in the use of water and yet it gives him a high incentive to economize the water.

CONTRACT ENFORCEMENT

I want to mention only one more thing on repayment contracts. Again I am sure it varies from country to country, but if you enter into contracts with users of resources, the time is going to come when you will have some difficult enforcement problems. That again depends on the customs and the attitude towards government in your country. But certainly our federal irrigation program has had some difficult times. In the depression after the World War I, and in the depression of the early 30's, farmers could not readily pay and they got into the attitude they would not pay. We had extensive moratoria granted to all irrigation projects for 3 or 4 years in each period. The government or anyone else can enforce a contract if it has a few people in default, but it probably cannot enforce it if you have masses in default. I mean if all your farmers in an irrigation district simply refuse to pay, you have almost a rebellion on your hands, may be a peaceful rebellion, but you cannot enforce the contracts. Of course that is a most unfortunate set of circumstances if it does arise. It is unfortunate if the circumstances are such that there is some merit to their position and it is still more unfortunate if people have that sort of an attitude towards operations by their government.

I suspect and I hope that people in your countries have on the whole more respect on the part of your citizens to their central government, than we have in the U S. I imagine this business of mass refusal to pay irrigation charges is less likely to happen in some of these countries than in the U S. I may be quite wrong in that. I think that is extremely important because most of your underdeveloped countries are going to be carrying on relatively more government activity than we have done.

Participant's question—Were these moratoria due to failure of irrigation water supply, or crop failure for other reasons?

Answer—No, they had good crops, but prices just went down. All of these refusals to pay have been altogether economic phenomena, not natural phenomena. They have grown out of price changes and extremely low income, not out of any natural conditions. Our irrigation developments have ensured the water supply. In other words they are based upon an adequate analysis of the hydrograph of the river and upon an adequate storage. Shortages are so infrequent and so small that the risk of that must be borne by the water users. There are projects like the Central Valley Project in California, where about half of the water is so-called Class 2 water, available only in some years and in some seasons. But it is paid for at a special price and when available. So there is no question of failure. If the time comes when you build large storage dams on your rivers, of course that runs into a large investment. But it would insure an adequate supply. Then in that case you would not have the necessity of remitting water charges for crop failure.

XII Administrative Problems in Settlement of New Areas

The next major subject which I want to consider is some of the administrative problems in the process of settling new areas. Again, I am going to

use irrigation projects as a primary example, although some of the matters would be at least partly applicable or equally applicable to other types of projects. If you had a land clearing project most of these same matters would be applicable. For some industrial projects they would also be applicable. And I am going to emphasize the administrative aspects because much of this material has been covered by other lectures, but I want to try to bring out some of the administrative problems that will be involved.

TECHNICAL PROBLEMS IN PLANNING SETTLEMENT

First of all, there are a lot of difficult technical problems in the planning of a settlement, whether it is irrigation or any other kind of a settlement. The matters that are important in a particular situation may be different from those that are important in another situation. In one of the projects recently discussed here, the all important question was the availability of water. In some other projects that might be a simple and non-controversial item, but on the other hand there it might be the quality of the soil or various other things. The range of subject matter that is important in the consideration of a settlement project has been outlined for the project reports. The soil, the irrigation water, the geological and topographic conditions, the roads, the markets and a great many other things, all have been considered previously at this Centre.

Perhaps the only one that has not been considered fully, at least in my judgment, is the planning of your roads and where your people are going to live. This involves, among other factors the relative merits of villages and open country settlements. Those two extremes of settlement exist all over the world. But there is also an intermediate type which is frequently not mentioned. You can have what is sometimes called a line village, where you do not have a village in the usual sense of the word, but where you concentrate your people along certain roads with their farm land lying back from the roads. That has happened in several parts of the world without any specific planning where your avenue of transportation was a water way and the farmers located along it. Their farms run back quite a distance away from it. You can get some of the advantages of village settlement from such a form of concentration along your highways.

A village is a concentration of people in one place with a farming area around it. Open country settlement involve farmhouses scattered over the country side. The line village involves roads or other forms of transportation at specified intervals, with farms extending back from the roads. You may get such a pattern of settlement any time that you develop roads or other forms of transportation and you do not have village farming. But it can be planned and thus made more effective. Particularly one aspect of it is to make your farms as narrow and as long as you reasonably can without interfering with the farm operations.

On one of the irrigation projects, we set up as our guide that the farms should be from 2 to 4 times as deep as they are wide in their frontage along the road. With the size of farms that we had, that did not interfere with the efficiency of irrigation or the efficiency of farm operations.

You could carry it to the extreme and have such a narrow farm that its fields would be so small that they would be expensive to farm and expensive to irrigate. The greater the depth you can get, with a reasonable frontage, the more houses you can get along the road. You can keep total mileage of road to a minimum and your population density along the road to a maximum. On this particular irrigation project it is not only a matter of building roads in a new area, but of extending electric power lines. It is anticipated also that there will be free delivery of mail along the roads, free buses to pick up school children, and trucks to pick up milk and cream from the farms. We felt that special savings could be made both in the original capital outlay and in the operating costs by means of this form of settlement as against either a random open country settlement or village settlement. Actually most of the farmers in the U. S. will not live in villages. By careful planning of the roads and then not constructing new roads that you do not need, you can govern the pattern of settlement and bring about material economies.

From an administrative point of view, the big problem is one of being sure that all of your specialized knowledge, and specialized groups of people, have been brought into the picture and yet they do not obstruct the development of plans. I think that your experience in working up your country reports has illustrated this point. You must consider a wide variety of facts, any one of which may be critical in a particular situation. It is not enough when planning a project to be right on 9 out of 10 important factors or even 99 out of a 100 important factors, if the one you omit is a critical one. It is a high standard, not like taking a course and passing the examination with a 90% grade or an 80% grade or getting a passing grade. You have to get a passing grade with 100% of the major points and that may involve a lot of different technical factors. In a particular situation it may be plant diseases or it may be plant pests, or it may be an insect or any one of a great many things. In other words for some of your planning a good entomologist may be a critical part of your planning team. In others the disease and the insect problems are not particularly severe and then you can more or less ignore them.

If any of you are going to be administrators of projects as a whole, one of your problems is to be sure that all of these relevant facts have been brought in, which means that all of your relevant specialists have been brought into the picture. This may involve technical production specialists, economic specialists, farm organization specialists, marketing specialists, price analysts, and in many cases sociologists. I do not know in whose field this planning of population distribution falls—the sociologists, the highway engineers, and others have all handled it at one time or another. What I have tried to emphasize by repeated examples is that the scope of knowledge you need for successful planning and therefore the scope of specialists can be extremely wide.

But you can go to the other extreme. I have seen it happen. Perhaps you draw up a list of all the factors that are important, and you get about 40 different ones. Perhaps you say, we surely must have a specialist on each of these. Then you get all those specialists together and you produce a lot of stimulating discussion, but it is a long time before you produce any plans and may be still longer to produce any

And as an administrator, you have to make some difficult decisions as to which specialists are important in a particular situation and draw them into the planning and yet keep the group as small as you can. That involves some difficult decisions, because by definition you are not a specialist, you could not possibly be. You may not have the experience and knowledge to know whether you need an entomologist or not and yet you are almost forced to make those decisions.

And then suppose you do get various specialists to work in the planning of your project and it comes to a difference of opinion between them. Perhaps it is the kind of difference of opinion where they simply do not talk in the same terms. I mean, if one specialist says there is a water supply and another says there is not, that turns around a factual decision which you can presumably resolve. But if one of them is arguing for one course of action on one set of considerations and another one is arguing against it on a wholly different set of considerations, then you cannot match them up. Their arguments just do not meet at a common point. And yet in some way as an administrator you must make a decision between them. Ideally, you force them to resolve their differences, but sometimes the decision comes down to you as an administrator.

The most effective technique that I know is one I suggested earlier, namely the idea of drawing together a team of research and planning people for a particular job and letting them work as a group without necessarily setting up any formal organization. In other words you might draw a few specialists from the agricultural department, a few specialists from the irrigation department and if you have a co-operative farming and a marketing department you draw your specialists from there. Their assignment is to devise plans and programmes for the settlement of an area. You set them up as a temporary working group, rather than attempting to build up a complete new bureau with all these specialists. That to my mind is the most effective technique of planning such programmes. But it is certainly not the only one. If you are the top administrator you can do a great deal to help the whole process along, not by intervening as a specialist and attempting to answer the specialized technical problems, but simply as a catalyst in bringing the various specialists together. You may find it necessary to insist on their coming up with some sort of conclusion which they can all support and which you can adopt and carry on with confidence.

SOURCE AND SELECTION OF SETTLERS

The next major problem in the development of any sort of a settlement project is the source and the selection of settlers. Incidentally, I think that this is frequently the most neglected part of a project. I think you will find relatively less reference to that in these lectures than to almost any other matter. Who is going to settle on these projects and how are they going to be selected? Sometimes the answer is quite obvious. You are building the project to settle refugees, but within the refugees, especially if the project is not large enough to settle all refugees, which ones do you

select? Who selects them? On what basis do you select them? That gets into to a lot of sociological and psychological problems with which many times the engineering people and the economists are not well equipped to deal. We have hinted at some of the problems of moving people from one area to another, from one type of life to another. We raised a lot of questions about it.

In that field I believe there are just as many possibilities of technical and professional approach to those problems as there are in most engineering and economic fields. Perhaps they have not been applied as often.

There is a question of whether you are making your selections solely on the basis of probable success or on some other basis. If you are setting up your project for the purpose of its succeeding, then of course you want to get on it the very best settlers you can. But has that met the needs of your country? You may set up a project, not for the purpose of growing crops in a particular area and having a successful profitable settlement, but for the purpose of benefiting a particular group. Your objective is different. If you were developing a private irrigation project, you would obviously want settlers who have the greatest opportunity of success, in order that your chances of profit would be increased. But as part of a national programme, it may be better to settle some other people.

But which group and for what purposes and how do you select them? I think that is frequently one of the most neglected aspects of irrigation and other projects. Often the detailed physical planning is done but then we just ignore this aspect of the human-planning—of who is going on the project, how they are going to be selected and how they are going to adjust to their new environment. Some of these matters have been raised before, and some of them have not in our earlier discussions. What I do want to emphasize again is the administrative aspect. I think the first and most important matter for the administrator is to try to get a full statement of policies on the part of his government. What group have you in mind? What are you planning this project for? Is it for maximum success of the project, maximum income to the people, or for a minimum subsistence income of the people, or just what are you striving to do in setting up this project? Perhaps my experience has not been the same as yours, but in many instances if you ask such questions, you simply cannot get any agreed-upon rational answer. You find that those questions have just never been worked out.

Then, next, as an administrator, you have to set up some form of an organization which is most likely to make that selection which you really want to have made. It is entirely conceivable that you will build a project and have difficulty getting settlers for it. If you do, that often times raises so many questions as to the soundness of the project. If there is not a willingness to settle on the project, it may be that there is a question as to the desirability of the project. On the other hand, if the project involves new conditions, new living arrangements, it may be that people will be reluctant to take them up, even though later, after they have become familiar with them, they are quite well pleased to have settled in that area. You may have a problem of recruitment even though it is a good project, but frequently the difficulties of recruitment grow out of the shortcomings of the project itself.

But if you have more applications from settlers than you have potential settlement opportunities, then how do you go about making a selection among those? There are some fairly well-developed techniques in interviewing and appraising people to be sure that you get some of the qualities that you are after. Conceivably you might deliberately set out to settle a group of people whom you thought would have a difficult time of adjustment, because they are something of a government responsibility, and you thought this might be a better place for them than any other. But certainly if you enter into any such arrangement as that, you are going to work with your eyes open. More generally, even among a group that you are trying to help, your desire is to select people with reasonably good opportunities for success. You have not done much for settlers in situations where you know they are going to fail and you may not have done much for your country or for the project that you are planning. There are no absolute criteria on the selection of qualities for success, such as there are engineering criteria for dams, for water supply or for soils or for what not. Success factors are much more matters for judgment and much more questions of probability than they are certain. But by use of good techniques it is possible to make settler selections from which you get more success than if you do not use such techniques.

THE COLONIZATION PROCESS

The actual process of colonization involves many difficult administrative problems. If you are going to prepare the land partly or in total before your settlers come, if you are going to erect some buildings before or after they come — whatever the sequence of events may be, it is necessary to synchronise a great many different activities into a nice even flow. You surely must have some place for your settlers to be located, when they come. If it is a moderate climate, they can be located in temporary structures for a limited period. If it is a severe desert climate or if it is a severe northern climate, you must have some form of better structures right from the beginning. There is also the problem of how much the settlers themselves can do in the construction of their own dwellings.

All of these matters of preparation of the land, construction of buildings, movement of the settlers, their supplies, credit for their first crops — all of those things involve literally thousands of details and in my experience, both my direct experience from what I have been able to read, by and large it has not been well done. It is always easier to criticize than it is to do a good job yourself. And as I said the other day, there are times when it is not sufficient to do 9 out of 10 things well, or even to do 99 out of a 100 well, and miss the 100th one. In the settlement of an area, particularly if it is a somewhat different or a distant area and involves a lot of difficult problems, it is difficult but important that every item be properly synchronized, one with another. That involves many many difficult administrative matters. Usually the best procedure is to work out first of all what you need and then work backward from that to get the starting time for

various parts. If certain things require 6 months to be completed, they have to be started 6 months before they are needed. If other things require a 9 month period, they must be started at an earlier time.

From my own experience and from what I have read, practically every colonization or settlement project has not been fully satisfactory in these respects. Let me give you one illustration. In the early 1930's in the U. S. a settlement was made in Alaska. This area has a rigorous northern climate — a short summer with very long working days, fairly good temperature, but a long severe winter. The settlers and supplies were sent up there in ships and unloaded. They also shipped up livestock at the same time. When the winter came there was nothing for those livestock to eat, and the settlers had to slaughter them and salvage what they could. They shipped rather expensive dairy cows which had to be killed for low grade beef. Looking back, it is easy to say, what an absurd thing to have done. They ought to have established themselves and then shipped in the livestock. That is the sort of problem that will arise and there is really no better test for an administrative organization, than to plan out some project of that sort and to get a nicely calculated flow of all the essential items so that they come together when they are needed.

There are two special problems which I might mention. One is marketing in a new area — you cannot produce products profitably unless you can market them and for many types of products that involves some sort of marketing facilities. They may be simple facilities, but to collect products, give them whatever processing is needed, whatever storage is needed and ship them on to consumers, requires facilities. The ideal marketing arrangement, once the area is fully developed, may be quite different from the kind of marketing facilities that you need during the development period. If you are developing a large area, for instance, you may want one central point when it is fully developed. Yet if you develop it by stages, that central point may actually lie outside of many of your first units of development, and it will be necessary to provide some form of marketing facilities during the interim settlement period. These should not foist upon you an inefficient arrangement when the time comes that the area is fully developed. But on the other hand, you cannot go to the other extreme and set up your desirable facilities at the beginning, if they will not also meet the needs during the development period. The magnitude of that problem will vary, depending first upon the complexity of the marketing facilities needed and secondly upon the time involved in the settlement period. If your settlement is going to be completed within one or two years, then there is no particular problem, but if it is going to take a 10 year period, then you may well have a difficult problem. I speak on this with some interest because it was one of the problems on which we worked quite intensively in connection with the Columbia Basin project. The ultimate processing and marketing arrangement may have a lot of difficulties in meeting the needs of the settlement period.

A similar problem will exist in connection with many types of social services, schools, educational facilities in general, cultural institutions and the like. What you need during your settlement period may be quite different from what you will need ultimately when the area is fully settled.

A location of schools or a location of health facilities or other things and the nature of those facilities may be different. You may have the choice between building a large facility to meet the ultimate need, which will be only partially utilized and, therefore, expensive during your settlement period, or building a temporary facility during the settlement period, or perhaps of building the first unit of an expandable structure.

A second factor to take into account is that in general, settlement is a selective factor in your population. Your first settlers in an area do not have the same characteristics that you will ultimately have in that same area from those same people. This is most marked in terms of age. It depends upon the circumstances in which settlement takes place. But, in general, migration of people for settlement, whether under government or by their own initiative or what not, is a strong selective force in population. Migrants are likely to be young families — young people just starting out with families. And that creates a most abnormal age distribution, the effects of which may be felt over 30 or 40 years or even longer. In planning the total amount of housing you need, the total amount of social services and the kind of social services, the age distribution of your population must be taken into consideration. Within the U. S., irrespective of irrigation development, many of our States such as California have had great migrations to deal with. There has always been an abnormal age distribution and it has had its effect on all sorts of things — on *per capita* income because you have a high percentage of working age in your population, lower expenditure in total for social services and particularly education, because you have a small percentage of children. It would be a serious mistake to assume that your population in a new settled area will have the same population characteristics as in an older area. Again that is one of the things that has often been ignored in planning for new areas.

I want to emphasize again that all of these matters will have an impact upon your administration — a real impact upon your administration. If you are aware that they exist then you can ordinarily make allowances for them.

CREDIT NEEDS FOR SETTLEMENT

The next major item I want to mention among the problems of settlement is the need for credit. Again, that will vary depending upon the nature of the project and the nature of the people that you are settling. Conceivably you can be developing an area, that is such a good economic opportunity and you have people in your population who are willing to move in, who have capital — then there is no problem of credit. That is conceivable, but it is not typical. Typically you are going to be developing areas, where there are difficulties involved in development. The Thal area as I have heard it described is like this. If there are no difficulties in any settlement area, it certainly would have been developed long ago. I mean, you can almost start with that assumption.

Secondly, your settlers are likely not to have ample capital resources, or they would not be interested in going into a new area and a different area and perhaps a difficult area. If they had ample capital of their own,

most of them would prefer to stay where they were and buy properties. That is not completely true because you will always have some people with plenty of money, who want to go into a new area, because they think that the prospects are better.

But in general the settlement of new areas is going to require some credit for settlers because the bulk of your settlers will need it. Often that credit involves a lot of unusual and difficult problems. In the first place, the economic base of the credit is likely to be somewhat speculative in spite of the best analysis you have been able to make. There may be some question as to just how profitable it is going to be for settlers. Most private lenders are going to be speculating about the prospects of repayment in a new area and consequently they are going to be reluctant to loan. And then you are going to put credit into a lot of actual development on the farm — buildings, the levelling of land, the clearing of land, bringing it under cultivation, perhaps ploughing under green manures or otherwise improving the soils — a good many things which are not necessary or which are not customary on an established operating farm. They raise a lot of unusual problems to lenders. So, therefore, lenders are going to be shy about coming in, to make credit available.

One of the special problems is always the question of housing. New housing is necessary in a new area and the cost of that housing is frequently a major part of the total cost. The kind of housing is one of the major issues on which there is a good deal of discussion. In general there is always a difference of opinion between your housing specialists on one side and your economists and your financial people on the other side. The housing specialists want to build initially the kind of houses they feel that the area should have and will have ultimately. Your economists and financial people want to start off with the minimum of housing and let settlers finance better housing out of their income and if possible built by their own labour. I am not sure that there is any answer to this question and no easy answer. In part it may be a compromise. It would certainly be a mistake to put all your available capital into a house. I have seen that happen. I have actually seen one case where they put it all into the house and then did not even have money to put furnishings into the house after they had built it. On the other hand there may be some minimum of housing which is essential for actual survival of the family. It is not exaggerating to say that in northern settlements the literal survival of the family depends upon an adequate level of housing. Certainly the health of the family depends on some levelling of housing. I would include with housing, provision of water supply and disposal of waste.

I am not trying to go into the technical problems of credit for settlers in new areas, but I am trying to stress some of the administrative problems. If you are going to extend credit to settlers in a new area, there must be the closest kind of co-operation between your various planning and engineering groups who will set up the project on the one hand and your credit people on the other. If there is any basis for credit, in the sense that it is going to be repaid, it is going to rest on their plans — not on the experience of the settlers. In most developed agricultural areas, you are loaning on physical assets and on demonstrated experience of your farmers. But in

a new area the assets are not there — you are loaning to create the assets and there is no demonstrated experience. The plan is all there is, if it is a careful sound plan, then there may be the basis for credit. If the plans are not careful, or if they are not sound or if they are not co-ordinated with the credit programme, then credit extension is hazardous indeed.

The timing of the advances of the credit, the supervision over its use, the necessary steps to ensure that it is used for the purpose for which it is intended and not for other purposes, that good improvements are made with it, that adequate protection is given to the lender and the borrower gives whatever security there is, that the dishonest settler does not get away with the resources that have been created with his credit, are some of the problems that will arise and for which your administrative organization must be equipped to deal. In general, you are going to pour out credit for 1 to 5 years in increasing amounts, without any repayment. It depends on the projects, but there are few projects where you can expect any repayments before the 3rd year and more often the 5th year and sometimes much longer. There is sometimes a psychological problem with your settlers, where actually they are getting along pretty well. But their debts are piling up year after year, they are not making any repayments and if they take that matter of debts seriously, they are likely to be upset and your lending people are also likely to be upset.

It is obvious that under those circumstances, which I think are fairly typical, private capital is not likely to be interested to provide credit. Perhaps it would be expecting too much of private capital to do it. It almost certainly means that the Government is going to have to do it. The Government may do it for two purposes (i) to help the settler out and (ii) to bail itself out. I was interested in Dr. De Vries' exposition of the Thal project. The impression I got was that the settlement authority there is essential to make sound and productive the large investments that have already been made in the irrigation works. As the Government, if you are going to have a settlement project — whether it is irrigation or land clearing or what not — you must put a good bit of money into it. Then you may find it necessary to go further in the extension of credit to settlers, in order that they can use what you have prepared.

SETTLER TRAINING

The last point that I want to mention in connection with administrative problems in settlement is the training of your settlers. You are almost sure, at least typically, that your settlers will be going into a strange area. It is inherent in this business of settlement of new developed areas that they will be encountering strange problems. In every country, in every line of activity, people do much of what they do from habit, custom and tradition. I would think that that would be particularly so in under-developed countries, where your people are relatively uneducated and where they do not move about as much as in some of the more industrialized countries.

When you build a new irrigation project or any other sort of a new project, and recruit settlers for it, they are going to be coming up against new situations. Now sometimes the most difficult situation for them is one they think is the same situation that they have always encountered. But it is actually different. Our irrigation people say that they would often times on a new irrigation project, rather have settlers who had never had irrigation experience, than to have people who had formerly irrigated but under different circumstances. Irrigation practice depends upon soil texture, slope, climatic factors, and many others. What works well in one place may not work as well elsewhere. The same is true of many, many other farm practices. What worked well on your farm, your family farm, your home farm may not work satisfactorily in the new settlement areas.

We encountered that particularly in the U. S. as our settlement proceeded from our rather humid areas into our drier and drier areas. You can find literally hundreds of areas where farmers tried to apply certain farming practices in drier areas, which they had known in a wetter area, and it did not work. In many instances they did severe damage. For instance in much of dry land farming areas, ploughing and cultivation of the land as you did in a wetter area resulted in severe wind erosion.

New settlement usually puts people up against new problems, for which their old experience may not fit them. It is sometimes also true that there are going to be some new problems for which the specialists are not prepared to cope, but it is probable that your specialists will have more of the answers than your settlers will. It is probably going to be necessary or desirable to extend special training and assistance programmes to settlers on new projects. A wise expenditure on many projects would be for special technical training staff to actually aid settlers, beyond the normal limits of agricultural extension work. They will encounter a great many special problems. If they are doing their own building work, they may need special help in planning and in actual construction. In many areas, where you have a fairly large and involved farmstead, the actual physical layout of the farmstead and buildings may be quite important. I cannot give you a good example fitting to your agriculture here. But in a dairying area, the layout of your farmstead and dairy farms may mean a difference in labour requirements of 25% or even 50%. In other words, when they are building it may be as cheap to build a well planned layout as it is to build a poorly planned layout.

At the time of settlement, settlers can use technical advice in a way that they cannot so readily use it later. There are dozens of illustrations that could be given — the irrigation practices, the seeds, the control of pests and diseases and weeds when they first appear, before they really get serious, etc. There are literally scores of problems, which the settlers will encounter but with which they may not be well equipped to deal. That will call for a special staff of educational people to help them. On the administrative side it calls for special measures of co-ordination between that educational staff and your planning staff, your irrigation staff, and the like. Co-ordination is necessary between your project engineers and your farmers in actual irrigation on the farms, because after all farm irrigation is only the last step in your whole irrigation distribution system.

All I am trying to say is, if you are general administrator, you ought to take all those into account. Even if you are a specialist in one thing, you should take them into account. And if you are general administrator you ought to try to ensure the co-ordination of that teaching with the rest.

XIII Some Sociological Considerations for Agricultural Developments

Of the lectures at this Centre, perhaps the only major item that has been omitted, and that should be included at another centre, is some sociological material. I would like to bring to you this morning some of this sociological material and particularly with reference to one irrigation project in the U. S.

SOME BASIC CONCEPTS

I am going to talk about three general ideas. I do not like to call them definitions, because for one thing they are not universally accepted. One of them is level of living, a second is standard of living, and the third one is content of living. I am using these terms in a strict sociological sense, not in the popular sense.

(a) *Level of living*

The level of living is what people have. That is easily measured. You can study a person's physical assets, what he spends for living—what he has in terms of clothing, housing, food, recreation and the like. That depends very largely upon three factors—his income, his tastes, and his ability to spend his income wisely.

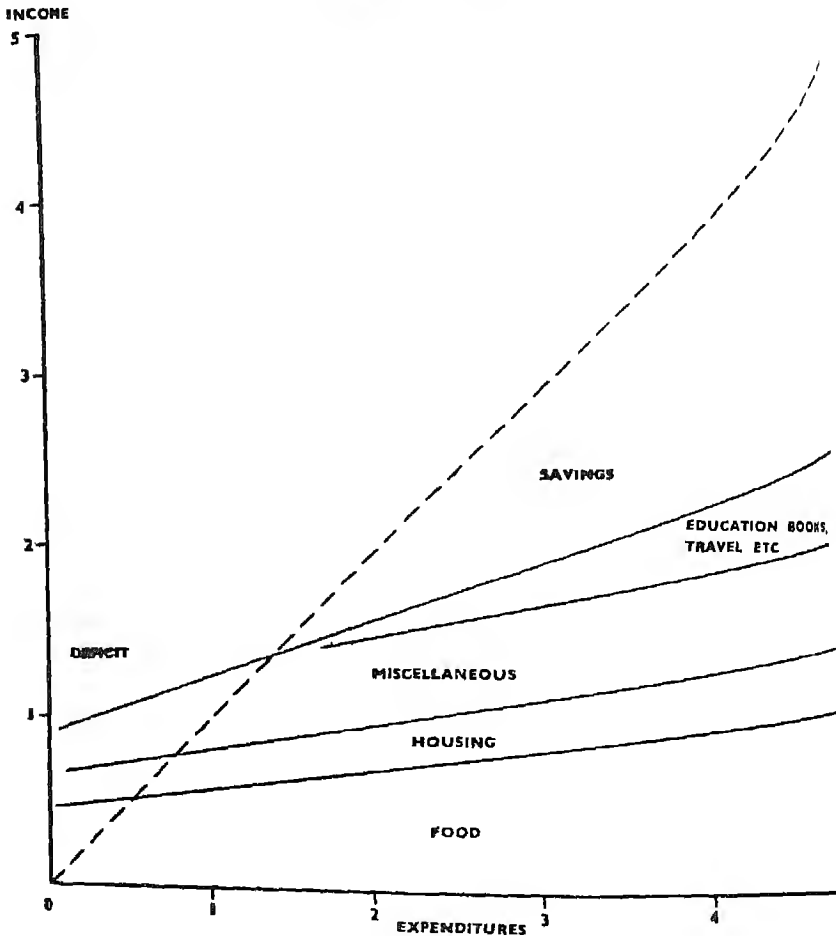
This simplified diagram was made up entirely out of my own memory and not out of the specific figures, but it is not too different from what such a diagram would look like for the U. S. In fact I had that in mind when I drew it. It is set up in such a way that that dotted diagonal line is the line where expenditures and income are equal. If he spends less than that amount, then he makes savings. If he spends more than that amount, he incurs debt. This is an oversimplified diagram, but it shows several things rather definitely. The expenditures for food increase as the income increases, but by no means proportionately. Expenditures for housing increase somewhat, but again not proportionately. Somethings such as education, books, and travel come in at a certain level of expenditure and increase rather greatly after that point. But the essential thing is that at low incomes deficits are incurred, and at higher incomes, savings. Do not put too much stress on the exact relationship. Possibly savings would not be quite as great as shown here.

What a person actually consumes depends primarily and first of all upon his income, what he has to spend. But secondly it depends partly upon what he wants to spend it for, particularly as one item against another. In other words, are you going to insist upon a fully adequate diet before you buy a single book, to take an extreme case, or are you going deliberately to

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spend less for food in order to dress well? What items do you want most in your expenditure and on what items do you put the most importance? Lastly, what you have to consume depends on how well you can buy. The studies out of which these data grew in the U S included an appraisal of the diets of the people. It was found that if your family income was low, it was difficult to get an adequate diet even under the best management. If your income was fairly high, you probably got a good diet without much care in purchases. It was particularly in the middle income range where some families did very well in terms of the actual diet, while others spending the same amount did poorly. The ability with which one expends money governs to a great extent the kind of consumption that he has.

SIMPLIFIED DIAGRAM OF FAMILY INCOME—EXPENDITURE RELATIONSHIPS



Your technical people in each field can appraise the level of living in terms of technical standards. The nutritionists can say that a certain diet provides enough calories, proteins, the various vitamins, and so on. The housing people have criteria of housing and the health people of health control and so on. Some of those criteria rest upon good objective evidence and some are established more or less out of technical judgment. For instance, the feeding of smaller animals and actual experiments upon men have established good standards in nutrition. Sometimes you can measure the importance of various things in terms of their effect upon the people, particularly upon death rate from certain diseases. There are some objective standards to judge the level of living, but they are only approximate and I do not think that they should be taken too seriously.

One thing to be reckoned with is this. If you say we must have a certain level of nutrition, or housing, or for whatever it is, and if you are going to permit your people to have a free choice in the matter, you must accept the fact that they are going to spend a lot of money for some other things even though you do not consider them necessary. For instance, in the U. S. people of very low incomes will spend money to go to the cinema or they will spend money for alcohol or for tobacco, even though it is at the expense of their diet. You cannot set up a budget solely upon your standards of what you want in that budget. You must accept to a certain extent their consumption patterns. If they are going to spend a certain amount of money for whisky even though it means going without adequate food, then, if you want them to have adequate food, you must allow the total income high enough to pay for both. If you try to impose a level of living for one item, which is out of harmony with the other items, they will not accept that sort of pattern.

(b) *Standard of living*

Now I come to the second of these terms, the standard of living. Unfortunately the popular language and often the technical people use the term "standard of living" in the same sense that I have been using the term "level of living". Sociologists use the term standard of living in a different sense, to mean, what do the people want? What do they demand? What will they not be satisfied without? What will they make major sacrifices to achieve? For instance if you feel you must have a necktie in order to go out into the street and feel respectable, then you spend money for a necktie even though you did not have any breakfast that morning. I am taking an extreme example and you can all think of other examples from your own environment. What will people make sacrifices for? Certain things are part of our standards.

Standards of living are essentially subjective, they are part of a person's personal standard of values. It is of course an axiom in the social sciences, that you cannot directly measure motivation of the individual. You cannot measure ideas. You can measure the consequences of ideas, but not ideas themselves. I think we can get an approximation of standard of living, by seeing what people do. We can form some idea of what they find most

important by the things they do. You can do it in two ways. One is by study of the items of consumption which they put ahead of others. I participated in a study of the U S where we found that several times as many people had radios, as had iceboxes, either the actual iceboxes or the electrical refrigerators. The cost range of radios and the cost range of iceboxes was more or less the same, and if they could have afforded a radio, they could have afforded the icebox instead. But they chose radios above iceboxes in spite of the fact that it was a farming area where some form of refrigeration in the summer time was desirable. Now, I personally would have made the other choice, because I do not particularly care about the radio, but the bulk of those families chose the radios above the iceboxes.

You can form some idea of the standard of living of the people by the income level at which they are willing to make some savings. On the diagram, this is at an income of roughly $1\frac{1}{2}$. I might say that these income figures are not too different from thousands of dollars in the pre war period in the U S. When a family is willing to incur deficit for its living, by consuming some of its past savings and to a degree prejudicing its future position, in order to maintain its present consumption, you can be fairly sure that the level of consumption they are trying to maintain represents some sort of a standard. They are willing to sacrifice their savings in order to maintain that level of consumption. Therefore, it must be to them a very important level of consumption. When they pass that level of consumption, if they are willing to put a good deal of their added income into savings then you can also be fairly sure that their more urgent standards have been met, because savings are provision for future consumption. So the point at which deficits begin to disappear and savings begin to appear for large numbers of people, is a pretty firm measure of what might be called a minimum standard in the strictest sense of the word.

(c) *Content of living*

The third term which I want to talk about is the content of living. This again is used in the strict sociological sense to mean what the people really get out of life. What are their satisfactions or their happiness? This is obviously even more difficult to measure than the standard of living. I am not at all sure that it is quantitatively measurable under any circumstances.

Sometimes, perhaps, you can do things which will improve the content of living. I think that one of the real questions in underdeveloped countries is whether your economic development is going to add to the real well-being of your people. I am not at all certain that there is any more real happiness and real satisfaction in life in the industrialized countries than in the non-industrialized countries. Income and happiness are by no means correlated in this world. It is true that many poor people are miserable, but a lot of people that are not poor are miserable too. The content of living is a psychological matter. A man may be perfectly poor. He may be in rags, he may be badly fed and poorly housed, but he may be a perfectly happy individual, or at the other extreme he may be a rich person with every

thing that he could want and yet he is thoroughly dissatisfied. He feels his life has been a failure and so on and so forth. I have used two extreme cases. Often times your industrialization progress tends to reduce your content of living initially. It makes your people unhappy and dissatisfied. They may be better housed, better fed, and better clothed, but still dissatisfied. They may not like the new location, or they may miss old friends, or the climate may not be as agreeable, or they may not like being on time at work, and so on and so forth. I am not going to pursue this question of content of living any further, because you can get into some deep water philosophically, and I do not feel competent to lead you.

GOALS OF RESOURCE DEVELOPMENT

Now let us try to use some of these ideas. I think the first question is—what are the social goals of the resource development project? Are you trying to raise the level of living of your people? Presumably you are. Presumably you want to give them more food, better food, better housing, more income than they would otherwise have. But what is going to happen to their standard of living if you raise their level of living? If you improve their position, but their ideas of what is necessary and desirable increase also, you may leave a gap just as bad as the original one. If we improve the level of living, what happens to the standard of living?

If you raise the level of living, to what extent are you going to raise it? Are you going to try to raise it to the present standard of living, or to some future standard of living, or just what is your objective? This becomes particularly important if economic opportunity is limited in your country. Take irrigation or anything else, you can only provide a limited amount of it. Should you try to put as many people as possible on those irrigated areas or should you aim at a fewer number of people at a higher level of living?

APPLICATION OF CONCEPTS TO COLOMBIA BASIN

What should be your social goal in planning? Let me illustrate these ideas by an example from the Colombia Basin irrigation project. We took a block of 100,000 acres of land of a certain quality. The careful land classification survey called it class 2S, about an average quality, not the best land that was available. We set up farm budgets, on 40, 50, 60, 80, 100, 120, 140 and 160 acres per farm. These and other data are shown in the Table. Those acreages might sound large to some of you, but are essentially one man farms, of mixed dairy farming and general farming.

The net income on this 40 acre farm, at pre-war U. S. farm prices, was \$711. Out of that 100,000 acres, we should have 2,500 farms of 40 acres each. The term "solvency rate" requires a little explanation. It was not perhaps the best term in the world, but we could not think of any other equally good short term. It is the percentage of the families of that income in similar farming areas, which had savings. In other words, at this income of \$711 in similar farming areas, 50% of your families would be incurring deficit and 50% making savings. It would be just exactly on a balance point. The reason why we used the term "solvency" was that a family incur-

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ring deficit is sooner or later forced to make an adjustment. You cannot go on indefinitely incurring deficits either you bring your income up or you bring your expenditures down. So the solvency rate here was 50%. Out of these 2,500 farms you would have 1,250 solvent farms, and 1,250 insolvent farms. So your net solvent farms are zero. In other words, you would be setting up just as many farms that would have deficits as would have any savings. Those that were having the deficits could not continue on that basis indefinitely.

If you went up to 50 acres per farm, the farm income would go up to \$825. The total number of farms would decrease to 2,000 but your solvency rate went up 59%, 59% will have savings and 41% will be incurring deficits. There are 1,180 solvent farms and 820 insolvent farms or a net solvency of 360 farms. When you go up one more step to 60 acre farms, the farm income goes up to \$979, there are 1,667 farms, and the solvency rate is now 66%. So you get 1,100 solvent farms and 567 insolvent ones or a net of 533. On the 80 acre farm, income goes up to \$1,153, you have now a total of 1,250 farms, and the solvency rate is 76%. You have 950 solvent ones and 300 insolvent or a net of 650. The same process is repeated for the larger farms.

The same point is shown in the diagram. The acres per farm are across the bottom from 40 to 160, and vertically is the number of farms. The total number of farms on the given area declines as the size of the farm increases. The number of insolvent farms declines most rapidly. The number of solvent farms declines also, but more slowly. The number of net solvent farms is the difference between the number of solvent and the number of insolvent farms. It reaches a peak when the farms have 80 acres each.

Total number of farms, number solvent, insolvent, and net number solvent, by acreage or net family farm equity earnings, per 100,000 acres of 2 S land, mature development, Colombia Basin Project

Acres per farm	Net family farm equity earnings	Total number of farms	Solvency rate	Number of solvent farms	Number of insolvent farms	Net number of solvent farms
	Dollars	Number	Percent	Number	Number	Number
40	711	2,500	50	1,250	1,250	0
50	845	2,000	59	1,180	820	360
60	979	1,667	66	1,100	567	533
80	1,153	1,250	76	950	300	650
100	1,394	1,000	79	790	210	580
120	1,636	833	82	683	150	533
140	1,885	714	87	621	93	528
160	2,133	625	92	575	50	525

Question—What do you mean by "insolvent" farm?

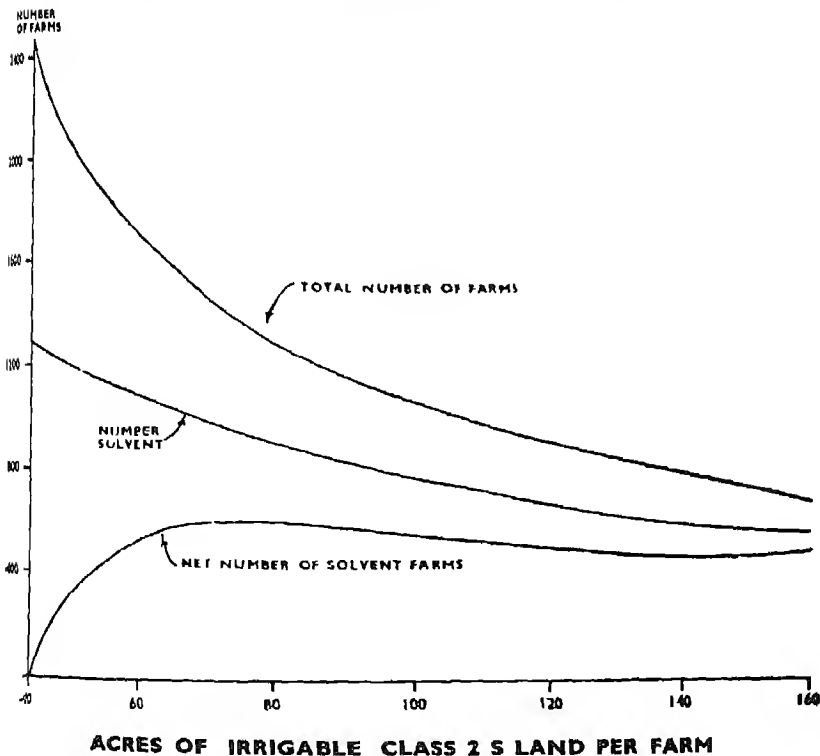
Answer—The ones that had a deficit we called insolvent. "Insolvent" was a term used by us, but may be there is a better term.

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that you can use. The reason we said insolvent (they are not actually bankrupt) was that they could not go on indefinitely expending more than their income. Where they were incurring deficits, they were drawing on past savings. Sooner or later they would exhaust their past savings, unless in the meantime they were able either to raise their incomes or lower their expenditures. But, at that combination of income, expenditure and deficits, they were insolvent. A business concern which goes on encountering losses, year after year, is insolvent whether it has yet reached bankruptcy or not. Perhaps "insolvent", was a little too abrupt a word to use. When we said "solvent", we referred to a farm on which the income, expenditures, and savings were in a balance.

At every level some farms incurred a deficit. Even on 160 acre farms with over \$2,000 income pre-war, which would to-day be 5 to 6,000 dollars net income, there were still 8% of them that were

TOTAL NUMBER OF FARMS, NUMBER SOLVENT, AND NUMBER NOT SOLVENT FARMS PER 100,000 ACRES OF 2 S LAND BY ACREAGE PER FARM, MATURE DEVELOPMENT, COLUMBIA BASIN PROJECT.



incurring deficits. Ninety-two per cent were making savings. The deficits may have been due to any one of several things. Some of those families that year might have had unusual sickness or other factors may have forced them to incur a deficit in that year, but which would be corrected in the following year. Some of this insolvency was temporary. On the other hand, within the so-called solvent group there were undoubtedly some who in other years would incur debt. These relationships were based on quite a large sample of population, with several hundred farms in each category. The averages ironed out the individual variations to a large extent. To have set up an income so that every family was making a saving would have required an extremely high income.

One of the things that lies behind this is the assumption that one in solvent form just offsets one solvent farm. If we had set up the smallest farms, half of the first group of settlers would presumably have succeeded and half would have failed. Then we could have drawn in another bunch and half of those would have failed and half succeeded. In time you could have established on each of those smaller farms, someone who would have continued, but the cost in terms of repeated failures would have been very great. To take the other extreme, perhaps we ought to be concerned with the failures of every level no matter how few the failures. But we tried to maximise the net number of solvent farms, not the total solvent farms.

The reason that I wanted to go into this material on my last lecture is that I think in a great many instances the technical side of projects is well planned, and, increasingly in recent years, the economic side also is well planned. But less frequently, and perhaps it has been true of this Centre, do we consider what happens to the people. What is the project going to do in terms of their income, their living, their adjustments to life? Some of that gets into more intangible considerations, more difficult fields of work. But I believe that good sociology offers some tools of analysis of these problems. You may not have these data, because they are relatively expensive, but you could use some of these concepts in the planning of your project.

PART V
FINANCIAL ASPECTS OF
ECONOMIC DEVELOPMENT
BY
DR. E. DE VRIES

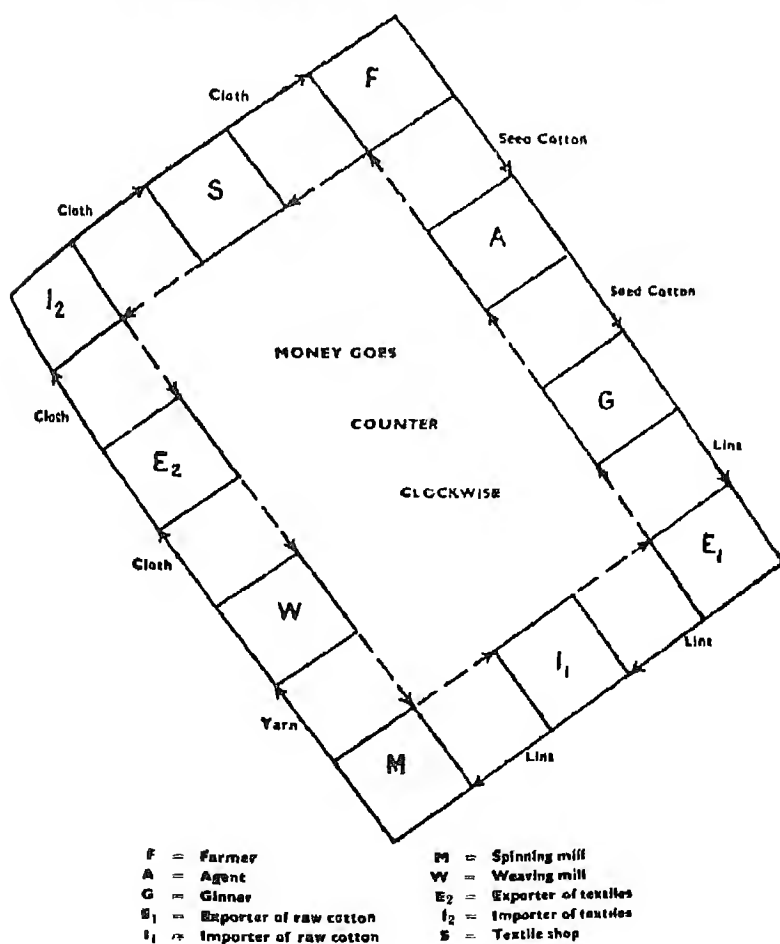
FINANCIAL ASPECTS OF ECONOMIC DEVELOPMENT

I. Relationships Between Money and Physical Economic Resources

MONEY USED TO EXPRESS VALUES

When we talk about the financial aspects of a development project or a development programme in a certain country, we start from its physical resources, the use of labour in the project and now come to the use of money for the project. This financial aspect of the project and the programme is closely related to the economic and the physical study and outlay. Why is it that a special financial study of these projects is necessary? have to look into the limitation in the use of the money, because the financial aspect is so to say super-imposed on the economic and physical aspects of the project. It is nothing separate—you can distinguish between but you cannot

CHART I
THE MOVEMENT OF GOODS AGAINST MONEY.



separate than the two. We shall put it in a very simple way because the theory of money and how it is created, is one of the most complex parts of economic theory and I could not deal with that here as it would take too much of our time. Let me take a simple instance of where money is used. You see in any economic process a flow of goods and of services, flowing from one part of society to the other and we see a flow of money in the reverse direction (Chart I)

There is a farmer who produces cotton, he is selling his raw cotton to the merchant and ginner, that man is selling his bale of cotton through the exporter to the world market, at the same time paying for the raw cotton to the farmer and getting money from the country where the cotton is sent to. There it goes to a cotton spinning mill. The spinner pays money to what in his country is the Importer and he gets money from the weaving mill. Again the weaving mill gets money from the wholesaler in textile and he is paying money to the spinning mill and from the wholesaler it goes to the shopkeeper and from the shopkeeper it goes to the farmer and the result of this process is, that the farmer is selling his raw cotton and buys clothes for himself, his wife and his children. This whole process came into being because most farmers do not spin and weave their own clothes as they did in very old times. We know that in certain areas in the world, people are just coming out of a time where there is no such circle, e.g., in the case of a farmer who consumes the rice he grows himself. The farmer does not come to his house and say to his wife here is the rough rice, now you go to pound it and you have to pay to me and after the meal is cooked I will pay you back. Maybe somewhere in the U.S. housewives get a salary and that is the extreme at the other end. There are still villages, where there is only very little flow of money. It is even possible by a very ingenious device to exchange goods and services without money coming into the circle. I have read about but not seen the system in a number of regions in India where the artisans in a village community get paid for their work making pottery and blacksmith and weavers, by a part of the produce of the farm. That is done inside the farm community and there is no money needed.

We could not say that in such a community, there could be no economic development and there could be no project. It is very well possible and has been done to a large extent that the farmers together made a tube well, or an irrigation canal, or they endeavour to set up a new village and clear land in the jungle. That has been done from time immemorial in most countries of the world without the use of money. But at the same time we know that these times are passing by and that even in the village, the use of money now is very common. There must be a reason why this development occurred. I should say the first basic use of money in economic life and a force in its development is the fact that money can be used as a common denominator for resources, benefits, labour and sacrifices. That means that we can evaluate one pound of bread against one pound of iron, and the price of wheat or flour or a cow can all be expressed in rupees. It is very difficult to express the hours of labour into cows, maybe you can express it in rice, but where this happens in some places rice takes the role partly of money. In certain parts of Africa, many things are expressed in terms of cattle. In that specific case cattle is money. When goods and ser

things are exchanged, you can put them much easier under the common denominator of money, than in a barter and the exchange is much easier. In order to do that, goods and services have to be priced. The way, why and how the price is formed, what it means, is a basic chapter in economic theory, which we need not touch. But we all understand that in order to compute the use of the money in our development programmes, even if it is a very simple programme, we have to know the price.

The farmer deciding to grow a certain crop, to plant certain trees—or not to do it, has to compare the possibilities. A man setting up a small shop or a small factory, or a government endeavouring to irrigate a million acres of land, they all have to evaluate the cost of resources, equipment, material, human labour and things like electric power. That is the way we really can scrutinize the plan and make our choice. Only if we compare the relative costs and the benefits of our different choices we get an idea which of our possible programmes would be the best. Sometimes you can translate all relevant factors into money, but very often you can't do it. If a farmer compares two different ways of growing cotton, with fertilizers or without fertilizers, he can say that his profits consist out of so many pounds of cotton, minus the cost of fertilizers and the money equivalent can be calculated. When we compare different projects and make our choice on economic lines, we will compare the relative costs and benefits and choose the most profitable—that which gives the highest amount of profit, which can only be expressed in money. You see that money now gets its own personality and is no longer just a tool to express relative values of certain products. In the more complicated processes it looks as though money becomes a good and a service in itself.

LIMITATIONS OF MONEY AS COMMON DENOMINATOR

In our money economy, although we cannot consume money as such, we feel that money is one of the most valuable goods in economic life. But one cannot say that money is the common denominator for all that we do in economic life. It is not true that everything can be put into money account. There are certain things that cannot have and do not have the same value and the same price for everybody. 'Pork' has a very different value for a Muslim and a Non-Muslim.

There are things in our economic life which are very important and which cannot or at least cannot easily be translated into money value. How do you evaluate freedom, leisure or health in terms of money? Some people sacrifice their health for money, so they probably fix their health at a certain price. But probably after all they will agree that they have made a wrong choice, by preferring some money for their health. How do you evaluate good human relations in money? Some people often sacrifice good human relations in their struggle for money, but they again have made the wrong choice.

(a) *Money lacking incentive*

I will give you one instance, and may be that again is passing as time goes on. People often wonder why a farmer who owns say two acres of soil, does not try even, to get work in a factory. His answer would be, well if I did, then I would lose my freedom. Now I go to my own fields,

and I feel at home and am at ease, but I have to go into difficult circumstances in a place where you may not be able to own your own house and you have to go at certain fixed hours to work, I don't like that. The people prefer to be a small boss instead of being a big servant. They prefer the feeling of freedom of action and not to be confined to a noisy and nasty factory building even if you get more money.

Now I will give you an example which I myself encountered once, where people used money values of their own labour and consumption and weighed them in a very queer way. I know of a case in Indonesia in a place, actually over populated and with a very low labour income, and very low wages between the people as they worked for each other in the village. There came a sugar factory and the management of the sugar factory thought it wise to go into that region with a lot of surplus labour, where the people could earn more money from the sugar plantations. Although they offered twice the normal wages in that village, they could not induce the people to work and had to import labourers to work in the fields, from a distance of a 100 miles. They were brought up and down by buses and it was rather expensive to the sugar factory. So they tried to find out why the local people abstained. The answer was 'Why should I work so hard for that money, those people don't get the benefit, they get twice the money we get, but they eat twice as much as we eat, so why would they do it?' So these people had an evaluation of their work, their income and consumption, quite different from what we normally think. We think that if you work harder and you earn more, you can consume more, and that is the end of it. But these people reasoned that the food they took was like the gas for an engine and it is no use, if your extra power is no more worth than the extra gas you need. So there are really on different matters a number of cases where money calculation does not work, because the translation of sacrifices and benefits into money is different.

(b) *Intangibles*

What we call, Intangibles are important in economic development, although they interfere with my subject—the financial aspects of the development project and programme. They are derived from the fact that not everything in human life and society and economic life can be translated into money. The common saying is, that because these factors are commonly rather strong in a village community all over the world, economic development must be slow, that they must be done away with, and the quicker, the better. Partly that is right, partly not. Social ties I believe that in the uplift especially of the rural community, we must take great care not to destroy values which come under the class of 'imponderabilia', viz the social ties of the village community, the social care of different groups. When you see the ingenious way in which villages have been able over centuries, over thousands of years, to develop and maintain irrigation facilities and tube-well system, you recognise, that this never could be done, if there had not been the community.

You might go to a certain place and say there are agricultural practices that are outmoded, that ought to be changed. You may talk to the people and if those farmers dared to open their mouths, they would say, in spite of what you are telling us, we are not going to follow it and we have

good reasons for that. I think, that the refusal of farmers to evaluate certain services in money is a very good thing. In Java the rice is cut by the women and the girls, one by one with a small knife, and this system prevails because it is a way of social security for widows and old aged people in a village. What they get from their work is much more than is economically justified. But if you destroy the old customs without replacing it with better, then for a long period to come, the under-privileged people in the village would be much worse off than in their existing system. This is one of the instances where outside economic reasoning, measuring labour as money, would lead to disastrous results and of course farmers would not change their methods. What we would be doing, is only showing our ignorance, by telling them to change the system. Only if you can find better ways of using surplus labour, if we can find better ways of using the land, so that the farmer can get a higher income without sacrificing the under privileged people in the village, then our programme is sound financially, economically and socially.

(c) Untapped resources

Let me give some other instances. There are not many countries in the world that have a good system of the evaluation of untouched natural resources, the value of a forest, or the value of the natural fertility of the soil. In most countries the people have just used those natural values in one or two generations, without taking care of the future. Is it important to leave part of these untouched resources intact, not use them now but reserve them for the future generation?

The assessment of the value of human labour, hitherto unemployed is an equally important point. Economic theory can give you guidance in that. But in many circumstances, it is fairly difficult in a programme, not if you look at it as a single project, but in relation to the economy of the country as a whole, to assess the value of the labour that was used for the project.

Then of course you have the fairly difficult question, what is the value of leisure. Is it important for a man to work only eight or six hours a day at a particular age? What is the use of labour saving machinery, if you can't do anything productive in the same time? You know that the use of leisure time in industrialized countries is a big problem. In order that people may make use of their free time, the authorities make a large expenditure on ways of travelling and sport. So leisure may have its cost.

FARM LABOUR AND FARM INCOME

We now come to some elements in our calculations where we find it necessary put some price tag on a certain service or certain goods but we know that it is rather arbitrary. If we have to put the price, on some of the services, labour and consumption on the farms, we have to make assumptions. There are some economists who say you should value the consumption at the farm at the price for which the farmer might have sold it. This is an assumption. If all the farmers of Asia would sell all their rice to the rice mills, the price of paddy would be different from now. What is the value

or the cost of the labour that is used by the farmer on his own land. There again the answer is that just as an assumption, in the analysis this labour is assessed at the same price, the same cost which he would have to pay, if instead of working, he would find a labourer to do it for him. Now of course everybody knows that that is not the real value of his own labour, because that hired labourer does not need to do the thinking, and the hired labourer will not be around day and night, as he is. Who would take care of the cattle during the leisure hours of the hired man, in the day and the night? Everybody knows that very rarely the hired man has the same feeling for the soil, for the water, for the cattle, for the whole outfit and therefore to fix the cost and value of the man's own labour just at the price of the hired labour is an assumption.

These assumptions are not only important in the farm economy, but also in the cottage industry. It almost never comes out in any statistics of national income, that the farmer in certain countries uses most of his own rice. You may take the price of rice in the village market, as against that in the town market, and believe that in the latter case national income would be higher. But people in the village are really saving the transport of the paddy to the rice mill and the losses in the transport and the losses in milling and the transport again back from the rice mill to the shop and from the shop to the farm. The farmer and his wife are saving that by using their own rice and that is a real benefit they get from their own farm. That is an enormous asset to the national economy and in itself is no gain if the system is followed whereby the farmer sells his wheat and buys bread in the bakery. In Holland there are cases where the farmer sells vegetables and the farmer's wife goes to the market and buys vegetables. That is an improvement only, if and in so far the farmer can specialise and thereby obtain a better and larger product, or the consumer gets a better service.

But undoubtedly there is much waste in transport up and down of commodities. This is obvious, when we consider the case of a farmer, forced by circumstances to sell more of his paddy crop after the harvest and forced to buy rice from the shop and the rice mill later on in the season. The apparent increase in transport along the roads, the new rice mills and the increased use of labour and investments for that transport and industry are deceptive. They do not add to the real national income, but are a drain on the economic resources of the country, unless the farmer in the new system can produce better, and the food supply of his family is better assured. When farmers specialise in money crops and get a better yield and at the same time buy their food, the change may be called development. The only fact, however, that hand pounded rice in the village is cheaper than machine milled rice, is no reason to embark on a progress to convert hand pounding into machine milling, and calculate an increasing national income by multiplying the quantity with this higher price. It costs extra labour and capital and the labour of many people in the villages becomes unemployed. We, therefore, should carefully study the project in its overall implications before we take the price increase as an addition to national income.

MONEY IN THE SEASONAL CYCLE IN THE VILLAGE

I now want to speak to you about a different function of money as it is commonly used especially in the village economy or in the small towns economy in many countries in Asia.

Money plays a role in such a community to keep the wheels of trade moving but for that purpose people use an astoundingly small amount. Money is used by the people in the village and in the small towns, in the markets, in very small amounts, mostly in small coins, for daily purchases and daily sales. I don't know whether that is the case in most of your countries, but I believe that the women are the greatest users and not only spenders, but also earners of that type of money. That is so to say an iron stock of money, that has to be available in the village in order to keep the trade circle going. When going to the market a farmer's wife will bring in vegetables or eggs or chicken or other surpluses she has for the market and there buy petroleum, sugar, salt and other things that don't grow on the farm.

But there is a second role of money, often at the same time and in the same village to feed the yearly cycle of life in the village and in the farmer business. In his income and his expenditure, his work in his fields and the reaping of his harvest, he has a yearly cycle. That is very clearly shown in those regions where you have only one major crop a year. It is less clear in those regions where you have two crops—a summer crop and a winter crop and it is still less so in those regions, where you have income more or less all the year round, such as the case where rubber or coconut prevail and where a village community gets all the year round several yields from their trees. Especially in a rice economy, you find one major crop of rice and the income of the whole region comes in a short period of the year. What is the role of money in such a community? To get a clear picture of a money economy, intruding a rice economy, we probably will have to go back to most regions, a little bit into history. And a very elaborate study has been made in Central Java in about 1880 by Dr. Sollewijn Gelpke.¹

He has made a study in a certain district, at that time rather far away from the railway, with a limited trade in agricultural products with the main town and with a limited flow of money from the town to the village and from the village back into the town. The two main methods to bring that money flow every year again into existence, were taxation by the Government and the fact that in the period of the cultivation of the soil, farmers got money advances from moneylenders. On the basis of this study, I put up an imaginary monthly money balance of such a region (Table I).

¹ H. Sollewijn Gelpke—Naar aanteeking Van Staatsblad 1878 No. 100, Batavia 1900.

FINANCIAL ASPECTS

MONEY BALANCE OF A RICE AREA WITH SOME MONEY ECONOMY (FREE AFTER DR. J. H. SOLLEWYN GELPKE)

TABLE I

Figures in guilders

Month	Money from crops	Credit obtained	Debt repaid	Tax	Consumption	Cultivation	Increase + Decrease - in circula- tion	Circulation ultimate
March	50				40		+10	10
April	200		100		50		+50	60
May	400		150		70		+180	240
June	150		50	100	50		-50	190
July	20			80	40		-100	90
August	20			50	40		-70	20
September	90			40	40		+10	30
October	30	50		10	40	30	=	30
November	10	80		10	40	40	=	30
December	10	60		10	30	30	=	30
January	10	10			30		-10	20
February	10				30		-20	0
Year	1,000	200	300	300	500	100	0	=

Twenty per cent crop is sold, tax and credit are in money, water is included in land revenue tax, farmers own their land

There are many different ways in which the figures from this imaginary, but typical balance sheet of the rural rice areas can be interpreted

There is a very definite seasonal cycle—75% of the money income falls in three months, but the villages evaporate that money rapidly—the maximum amount available at the end of May is barely 25% of this money income. The farmer cannot keep money, he has to spend it (although in fact he is very thrifty) Only 50% of the money income from crops can probably be spent for the daily necessities, and 50% of total money income are spent on repayment of debt and taxation

Some people have said as the basis of such figures: "The farmer does not profit from his labour, he is exploited and heavily taxed" (Taxes however are 6% of gross income and 6 2% of net income) Some critics say: The farmer uses only 50% of the credit obtained for productive purposes, the remaining 50% is used for payment of taxes in arrear and consumption (He has however to keep as long as possible the iron stock of money in circulation in the village) It is evident, that interest charges are very high, it is 50% over about 6 months, but the demand is pressing in October—December and the good side of the picture is, that farmers are not induced to borrow more than the lowest minimum.

Consumption is generally stepped up in the months of harvest and goes down in the difficult months before harvest. If total farmers income is calculated at 4,000 (in kind) plus 500 in money, the percentage of cultivation costs in money is very small, only 2% of total income. This is a net figure, as the farmers also get food when they help their neighbours, but at the same time use of their paddy in stock for meals for neighbours. Any increase of this small money outlay in that time of the year (fertilizer or better seed), counts double in his mind. Other outsider critics again say: Farmers are conservative, shy of using working capital on their farm. (They must, however, be absolutely sure that in next year their money and food balance will both be in equilibrium) It is clear that the money balance is in a very precarious equilibrium, any partial crop failure will upset the balance. It is also clear that money here is more than just the catalyst of movements of goods, as in the case of cotton and textile trade. The credit obtained in October—January may be called capital even if only half of it is actually spent on costs of cultivation. It is an essential requisite, even in this backward rural area.

This statement shows that the money in this community has the specific function to bridge the period of income from the farm and period of expenditure. We might have hoped that they would come out with a plus at the end of the year, but often the farmers in such a community can't manage to come out even, we may be glad if they can do that. These figures, as I told you, are imaginary, but in a typical way exemplify the bridging role of money. Both the money that stays in the possession of the farmer and the money that he gets on credit from the middleman, even if he gets that at a very high rate of interest, are indispensable to him. I personally have often read in books that for such a village community, the use of money is not very important and people say that because they just look at one angle, the proportion of the total harvest which has been sold for money, and that percentage may be very low. In this case may be it is only 20 or 25%.

For the periodicity of economic life in the village, money is enormously important and from this case you see also how very important it would be, if by an irrigation work, people would be able to improve secondary crops in the last part of the year. If the village could sell only 200 more in October, they could manage in the same way, without borrowing from the moneylender and would save 100 on interest and therefore if you make an irrigation programme or a flood control programme and look at the benefit of the programme, one of the most important things is to find out

in which period of the year does it come. It is much more important to have a small secondary crop in this region—say of 200 value, than to add 200 value to the main crop in April or May. Even a farmer who was a very wise man and would envisage to put the money that he gets in May or April in a safe place and keep it till the end of the year where he would have to use the money for the cultivation of the soil, has a very very difficult task. In such areas with a low income, the farmer most probably cannot keep the money over a period of 6 months, to be used and the fact of a higher yield in May, would probably mean an increase in taxation and an increase in expenditure for normal life and at the same time he still would have to borrow money in November and December, and he would not save the interest on the debt which he now has to make.

I have made personally on Java a detailed study of the use by farmers of money from private sources and from co-operative banks and a people's bank and I found a very clear correlation, almost an absolute negative correlation between the income from the secondary crop which comes off on the fields at about a time of the largest expense for the next main crop and the amount of capital borrowed from private money lenders or from co-operative banks and the people's bank. And from this fact that the farmer did not go into debt if he were not forced to by the cycle of their whole business, I came to the conclusion, which may be only of academical value, that the farmers in that region were very thrifty and good peasants. They did not go into debt even if the credit was offered to them. I made that investigation at the request of the manager of the people's bank. They did not have a large business in that region and they saw that the farmers did not come to them to borrow money and thought there might be three reasons—

1. that they were so far in the grip of the moneylenders, that they could not come to the people's bank or,
2. that they did not appreciate the use of money enough to come to the bank, or
3. the procedure to get money from the people's bank was not a good one, that there was too much red tape to get money.

My conclusion was because these farmers have two crops in the year and in this region the secondary crop is about as good as the main crop, they don't need it. By two crops in the year they can bridge the gap between the two income sources. So credit is not necessary for them for this purpose and we need not bother about it.

For an irrigation engineer or a man interested to develop the agriculture in a region, the clear conclusion is that a change of a One Season-Crop into a Two Season-Crop is an enormous benefit for the country. The money that is derived from the 2nd crop counts much more than the money that would be added to the main crop and therefore there must be a very good co-operation between agricultural and engineering officers to make an irrigation scheme and a crop rotation scheme, so that it gives the best profit to the region, taking it over the year as a whole.

Money as used here, mostly to overcome the difficulty of agriculture in the fact that the crop comes off once or at the most twice in the year,

can be called Capital and in normal life we say that the moneylender lends out certain capital to the farmer to cultivate his fields. The fact that under circumstances no such capital would be used is in itself not the proof of a higher or lower standard of the agriculture. It would be a very good thing if the farmers had not to take up that yearly amount of capital for the cultivation of the soil in the beginning of the crop year. It would be much better for them if they had more equally divided income and could do without credits.

We will come back to this point when discussing the financing methods of agriculture.

MONEY USED AS CAPITAL

We have seen yesterday the use of money in an agricultural community with only a partly money economy and you will have noticed, that it is mostly used as a reserve for coming need, one might say as a commodity to be exchanged later against other commodities. A small amount of it was used for future production. In this case the money acted as capital, it was used for future production and I want now today with you to go in to the use of money as a form of capital, and then I take the definition of capital as given by Von Böhm-Bawer that capital is a product that is used for further production. Now in order to see what its function is as capital in any project, in any factory, in any agricultural enterprise, we look at the following chart (Chart II). It is a budget of a certain enterprise, in a slightly different way from which a budget mostly is set up, but still you have to consider this as the budget. In a budget we have two sides. On one side we find the costs of product which somebody wants to produce. He tries to find the resources which he needs and combines them, and makes a cost appraisal. He changes them into new products of a certain value and in this process he uses up some of those resources completely, and some only partly.

Some of them have been used so slightly that you cannot notice it, a man who clears the land will plan to do that for a very long period and even some times the economists have said that land is a gift of nature and is indestructible and will last for ever. Now I do not think that there is any one in this part of the world that would say that. But land has a very long life time and other resources that we use for production like the factory building or machinery in the factory have a long life time. If we use raw iron and steel and we make machinery out of that, that raw material is completely used and labour resources are used in the process of production, and have to be fully paid out of the product. For those parts of the resources that are used but not used up, a certain depreciation has to be put in our budget. That means we have at least to pay out of the product, the wear and tear of those goods that are used over a longer period.

Now if we would go back in this process, we would find that the raw materials which we use are the products of other people, with labour used in every stage and an increasing contribution of nature as we go back. When

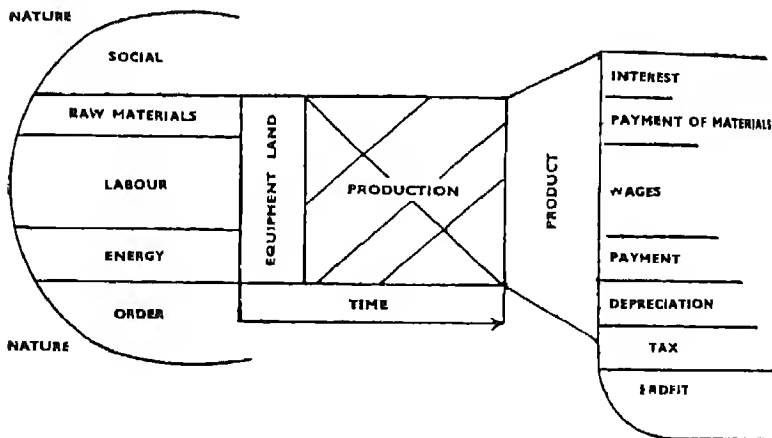
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we start with the natural resources of the world, we find a whole chain of production processes

There is one other factor which I would want to mention because it is very important, especially in rural communities, in less developed countries. I might say it is very important in a highly developed country also, but in a slightly different sense, e.g., that is the social order in which the whole process of production can take place. And when a man out of his product or income pays his taxes and duties to the community, he pays for the social order, to the security that is given by society and the government as a whole

Now it is no use to start this process of production, unless we are reasonably sure that the product has a higher value than the resources with which we start. We, therefore, have to make a budget, and more than just that, we will have to compare if we can make more profit with other combinations of resources. When labour is cheap we use more labour and less machinery and if labour is expensive we use more machinery. The same applies to land and to fertilizers. Furthermore the different products that might be made out of the same sort of resources, will have to be compared.

CHART II



When we look again at this chart the hope and the expectation is that the product will have a higher value than the resource that have been utilized and in the lectures of Dr. Lund, he has given you instances of costs and benefits accounts and he has already set out certain aspects which have to be studied to find the ultimate combination of resources to get the highest production

Now the result of the work goes back into society in the form of goods and services that are produced, this applies as well to railway budgets for transportation services as to a factory that produces certain goods. Once they are brought back into society it is expected that all of the resources, that have co-operated in the process, will get their reward. It is not sure that they will get it, there is always a chance that they won't. First of all, raw materials, labour and power have to be paid.

For the equipment and partly also for the land we have to put in depreciation and then there is as we hope something left over. Now this is divided into interest and into profit, and in order to explain why ordinarily it is divided into interest and profit, I will have to tell you where the money is coming in.

Why is there a surplus after he has fully paid for his material and the energy, has paid all aspects of human labour and has paid for the wear and tear of the equipment taken broadly, factory, land and everything? The reason is that essentially one other factor comes into this process of production and that is time. There is a lapse of time between the assembling of the constituents in the process of production and the moment where the people really get the use of the product. That has to be paid, and the interest can be explained as a price for those capital goods that are used over a certain period of time during the production process. That people are prepared to pay for that, can be explained by the fact, that if we have the choice between the goods now, or to have them only after a year to two years, we prefer to have it now.

This principle applies in particular for the man who seizes an opportunity for production which we could not have if he could not assemble all his raw material and his labour now, and at this point the specific value of having money at his disposal comes in the picture. There is a difference between products as to the number of kinds of utility of different intensity, to which they may be put. I may use textiles for a number of uses of different intensity. I can use steel for a larger number of uses. I can use human labour probably for still a larger number of utility than steel. But I can use money, I should say for the largest number of all, because with money I can change one product into the other. If I only had steel and no copper, I would have to go round and find somebody who had a surplus of copper and no steel, that would take me a very long time. But when there is an established market where everybody comes and can exchange a surplus of copper, of steel or a possibility to work into money, then saying it in common words, the power which somebody has over the materials necessary for production becomes fluid for a certain time, and it goes easily to those places where one can have the quickest results and the best results. And therefore, the money, which at first instance may be only a way to settle certain transactions, becomes in the hands of the producer, a purchasing power which he can direct quickly in different directions. Therefore, a man who goes into production will want to have a certain quantity of the materials which he needs, not in the form of the labour or in the form of the iron or in the form of a factory, but in the form of a liquid reserve of money.

This money at the same time has to come from a certain source, it does not just come from heaven. Some people have money and they do not like to use it now — they prefer to wait. Other people think that by waiting, they would lose and you therefore find people on both sides, or people wanting money for present use more than others and in that way a money market starts. The use of money is bought and sold at a certain price. Now if a man has no money and he needs some of that in his process of production, to expedite his action, he would be ready to pay for it. The man who likes to wait, can get and will want a certain reward for that waiting. So money as a fluid capital, facilitates the bringing together of all the elements of production that are necessary. May be it is the only way to have a right combination, but it does not in itself create new material for production. It has been said before many times, I have read over a record of the lectures given to you—that the money itself is not the real constituent of production, but that you need the cement, the iron and the labour and the energy. But I would like to point out, that without that money and without rapid interchangeability by means of the money of one element into another, the process of production would be much more difficult. It might just be one of the basic differences between what we call a highly developed and an under-developed country, that under-developed country has not much possibility of diverting its own labour or raw materials in different processes of production. There are not many different uses of the land. There are not many different uses of raw iron or of cement or of cotton in an under-developed country. The higher developed country is, the more diversified the use is of each of the raw materials and the more diversified is the possible use of human labour. It is this element of combining resources and combining them quickly, combining them in the right combination, that creates a higher profitability of that combination. So we see that a development of a market for money, and the development of the rapid interchange of different commodities are interdependent. In so far as it is beneficial to a better combination of production, the money itself becomes real capital.

In the production process, where a man has to make rapid decisions, has to buy and sell rapidly, where a man has to anticipate, where a man has to make a stock of raw material, where a man has to pay his labour a long time before the product is sold, there the use of money in his enterprise will guarantee him or at least give him a much more good combination, a much more profitable combination of his production factors than if he has to do without. That is the reason why commonly speaking, a lot of people say, "I have a small business, I could enlarge it if I just had some more money to start with. I could not only make a bigger but better combination. I could put in some more labour, if I only could find the means at this time, or another better combination of production factors."

If a man, by getting money, gets power over more productive elements, he has to draw them from another place in society where they are, he cannot bring them out of nothing at the time he uses them. If he is successful after he has done his work, the world as a whole will have more product. If in any project you would like to speed up the work — the government could not wait till it has the material needed for the work, or the private

person who wants to start a factory could not wait until he has saved out of his income enough money and material to start his enterprise and you give him the opportunity to start earlier with a better and larger combination, those resources have to come out of what is available in the world of to day, not things that might be available in the world of to-morrow, or a year from now. This entrusting people with the use of better combination of productive elements is *financing*.

Financing should enable a private individual or a corporation or government, to achieve more production out of the available resources and then the society will gain. We must try to make the best combination. Well, a 100% best combination probably never will be achieved. But with the financing we will try to make it better, with the human labour that is available, in such a way that not results will be the best for the society as a whole. That is the aim of financing. It cannot create new resources, but it can reassemble them into a better combination. So financing is one of the biggest essentials of higher development.

II National Budget and National Account

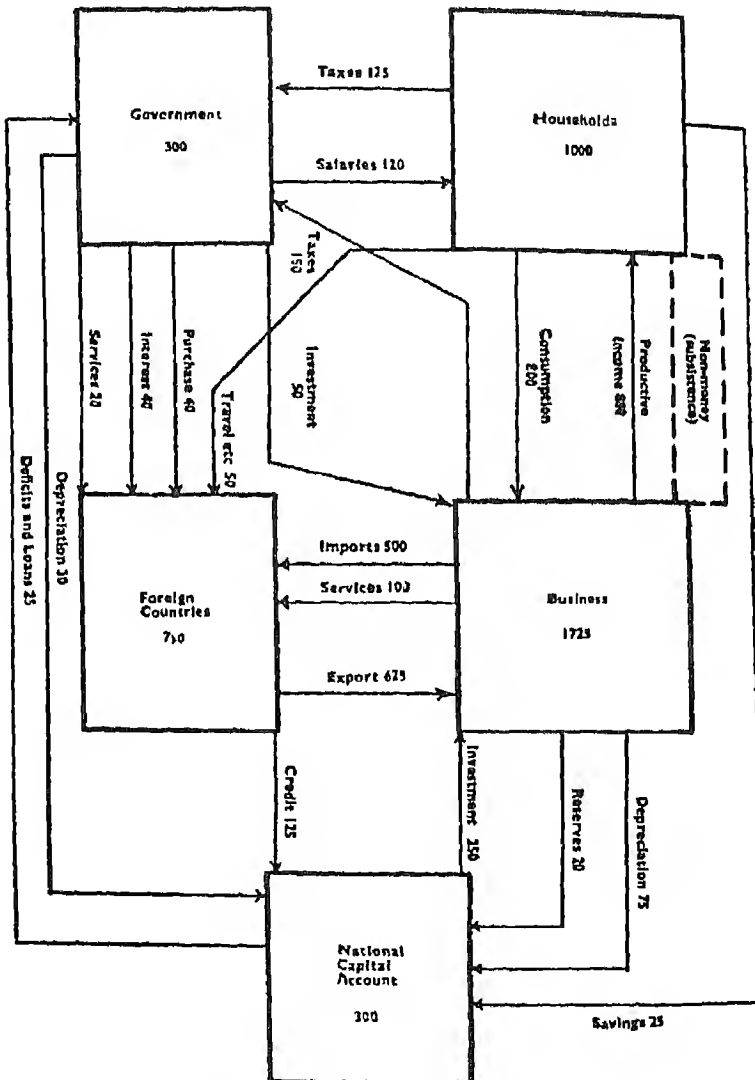
In order to see the implications for your national income and your national programme of capital investment and especially of capital investment from abroad, I believe it is a good thing if we spend some time in the study of the money machinery of a country, how the different parts get together, because there is actually a circulation of capital and consumer goods, services and money through society. I give you first of all a chart (Chart III) which at first looks very intricate, but which is not so very difficult I hope.

It is an illustration based upon a real thing, the central economic plan for the Netherlands for 1947 *. There are many countries in the world that are making at present every year a central national budget and a central national account. I have simplified it largely in the chart that is at your disposal. There you find as the first element, business, including not only agriculture and industry but also trade and banking and insurance companies and other societies and firms that render services to the nation. You see the relation between the private households and business, with a productive income at a figure of 880 and purchase from business for 800. This part of the national income includes wages, profits, dividends, everything that is going out from any type of business into the family budget and families are spending that money for a large part, for buying consumer goods, from business enterprises. They are paying taxes that could be taken at 125. On the other hand, the salaries from government officials that go directly from the government into the households, are treated as income in the opposite direction and are taken at 120. As business includes all forms of business activity for production of goods and services, we take it that all the inter-relationship between types of business where one part is buying from another, or transportation services to another branch of business, remain with the circle of business money movement.

*Actual figures have been changed, because they were confidential, and as far as possible, they have been made to differ to avoid confusion in their use.

CHART III

I. SCHEME OF NATIONAL ACCOUNT



We see the relation between business and foreign countries and in this stage we take imports at 500, services rendered by foreign countries for transport, insurance and other expenses at 100 and the exports from the country at 625. The amount of exports of course indicates a flow of money from foreign countries into the country.

In this chart I showed an addition to the original with regard to the request from Mr. Henderson to Dr. Singer — how to deal with non-money income from subsistence farming or anything like that. Well if the business does not include money transactions, you may put it as a sort of short circuit between business and household. It is consumed in the same family unit, which is at the same time business and household. And if there are no sales of products from that part of the economy, there will be no further relations from that part of the economy with other parts of society. It is even very difficult for the government to collect taxes if nothing has been sold. So I put here in the chart the non-money income as a special part of the economy both of households and of business.

Now there are more relations in the chart — private people from their income spend money in foreign countries, I have put here a sum of 50. Taxes are often paid by business and not directly by private people. In this case those taxes have been put at 150. And when the government is constructing a building or may be an irrigation work, it will buy from business, and you will find the line between government and business there—income for business.

When we start looking into the position of the foreign countries, what they pay and what they get, we see in this chart, payments to foreign countries for, purchases by the government, interest paid by the government on loans in foreign countries, services rendered by foreign countries and some expenditure from private income in foreign countries, and then the effects of import and export and services to business.

Now in any national plan, the direction of the arrows may be in one or the other direction, it may be that business is rendering more services to foreign countries, than it has to pay to foreign countries and in that case, that line of services will go in the opposite direction. It may be that you have a lot of tourists in your country, and then hotels and railways in your country will earn money from foreign countries and that will add to the services rendered by your country to foreign countries.

In the right corner of the chart I put a square for national capital account, that is so to say a common reservoir, out of which some people or the government or business may draw and where from different sides, the assets are assembled. And that is the place where the money market and the capital market which were discussed yesterday by Mr. Qureshi flow together. That is a reservoir of national capital, you see what is coming in there, you see first that business has been making reserves and that business puts aside a certain depreciation of its assets and you see how households have been saving only 25. Now in 1947 after the war in the Netherlands, the figure of savings was very low, in fact there had been some desaving, because some people during the war had accumulated money which they could not spend at the time, and after the war when more goods became available, they were buying a lot of consumer goods, which they badly

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needed, like a replenishment of their clothes, their furniture and other things. It, therefore, is possible under circumstances that households draw from the national capital account, but the more common phenomena is that the households are saving and that comes through saving banks on other institutions into the national capital account.

You see that business is making a large claim for investment and in that year it took a special large claim because of a lot of reconstruction work, that had to be done after the war. You will have the same if you have a large investment programme in business because of your development programmes; you see that investment is taking a large amount, out of the capital account (250). Another line that is coming in as a replenishment of this reservoir is depreciation of government assets, that is put at 30 here. The government has to put in its own budget, if it has a good budget policy, depreciation on its railways and its buildings, and at the same time government is expanding its capital assets and that is put here as you have seen as investment, where government is buying from business.

Finally in this case you see from foreign countries a large credit that has been invested (125). And then there comes at last, at the bottom of this chart, a final calculated deficit and loans for 25.

NATIONAL INCOME

When we consider the whole flow of money through society, you see that quite a nice number of equilibria are established. I have put them on the next pages, and if you take a look at them, you will see how nicely it works, when you study a number of national budget equilibria. First the household and there you see that the income of the private families are mostly from business as productive income, and from salaries from the government. And you see on the other side their expenditure — what they are buying from business, from shops and what they are paying on taxes to the government, what they are spending in foreign countries and their savings and of course that has to be in equilibrium — if there are no savings, if they spend too much, then there will be de-savings — some of their assets will have to be spent.

	<i>Income</i>	<i>Expendi- ture</i>
I. Households—		
Business	880	800
Government	120	125
Foreign countries.....	...	50
Savings .....	...	25
Total	1,000	1,000

In the same way you see an equilibrium for business and there what private people spend for purchases, what to private people is paid as wages and profits and dividends and taxes to the government. With foreign countries they have income from exports and they have expenditure for

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imports and services. They have an income from investment and they have to set aside depreciation on their capital investment. And there are reserves made and that must be in equilibrium. You see that this equilibrium in this stage has been made at the expense of a great net investment from foreign countries.

	<i>Income</i>	<i>Expendi- ture</i>
2. Business—		
Households	800	880
Government	50	150
Foreign countries	625	600
Investment	250	..
Depreciation . . . . .	..	75
Reserves . . . . .	.	20
Total	1,725	1,725

Now we come to the government, that also must be in equilibrium. The government gets taxes from households and from business and has to pay salaries to its employees and buy for investment in buildings from business. It pays an interest on loans to foreign countries. It has to put as an expense depreciation of its own capital assets and in this case you see there is a deficit, the government makes it round by drawing from the national capital account. May be it has to raise a loan, or if it is temporary or not too large, then the State Bank will grant a short term loan for the government to overcome it. But it has to come from the national capital account.

	<i>Income</i>	<i>Expendi- ture</i>
3. Government—		
Households	125	120
Business	150	50
Foreign countries . . . . .	..	100
Depreciation . . . . .	..	30
Deficits and loans	25	..
Total	300	300

The foreign countries are again in equilibrium, but in this case only because they have given or are supposed to give a large credit to the country.

	<i>Income</i>	<i>Expendi- ture</i>
4. Foreign countries—		
Households	50	..
Business	600	625
Government	100	..
Credit	125
Total	750	750

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Lastly you see the equilibrium in the national capital account and there you see savings and the reservations and depreciation from the capital assets from business and from the government. You see the credit coming in from foreign countries, investment in business, investment by government and there of course also you find that deficit that has been spent by the government. When the expenditure from the national capital account is larger than the income, the equilibrium, really is of a book keeping character. You make it equal on both sides by putting a deficit on the balance side.

	<i>Income</i>	<i>Expenditure</i>
5. National Capital Account—		
Savings from Households	25	..
Reserves from business	20	..
Depreciation from business	75	..
Depreciation from government	30	..
Credit from foreign countries	125	..
Investment in business . . . . .	..	250
Investment by government . . . . .	..	50
Deficit and loans	25	..
Total	300	300

Then I have given you a presentation of national income and you will remember that Dr Singer has explained to you that national income can be defined in three ways as production, as consumption and as income. It looks a bit like juggling with figures, that all these equilibria should exist, but they really are derived from the fact that if you take a part of your national life, it just has to go round and if it does not go round, then you put in savings or desavings and reserves or loss or you have a deficit or a surplus in your government — so the equilibria which are made, are account equilibria. In these national income statistics, you find income and production and consumption in a similar way as they have been set out by Dr Singer and as he has told you that it should be the same, you will find that here all the three calculations come around at 1,295

6. National income—

(i) Beneficiaries

Received by households, $880+120$	1,000
Received by government, $125+150$	275
Received by business	20
Total	1,295

(ii) Sources

Derived from business, $880+75+20+150$	1,125
Derived from government, $120+50$	170
Total	1,295

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(iii) National consumption and national production

Consumption by households, 880+120-25...	975
Used by government, 300-50	250
Deficits and loans	25

National consumption	1,250
Reserves and savings, 20+25	45

National Production Total	1,295
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BALANCE OF PAYMENTS

And in the last place I have put here a balance of payments, I will not go into that in detail. We have discussed certain elements of the balance of payments and this is enough for our purpose, but I have given that to you to make it more complete.

<i>Income</i>		<i>Expendi- ture</i>
7. Balance of Payments—		
Exports.....	625	Imports 500
		Services paid by business 100
		Travel and other house- hold expenditures..... 50
		Government purchases.. 40
		Government inwards . 40
		Government services..... 20
Total current amount .	625	750
Credit .	125	.
Total capital account ..	125	..
Total balance of payment	750	750

STRUCTURE OF INDUSTRIES

This national budget has been the work of course of many people and it is composed especially in the business section by detailed plans for every part of business. I would like to give you one instance how that has been done, because that gives you an idea, what figures are needed to see what a

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certain branch of industry is doing for your national income and your economy as a whole and I give out an instance of just one that is of interest to you, the textile industry. (Chart)

CHART

BUDGET FOR TEXTILE INDUSTRY

Imports 300					Households 353
Domestic 203	Raw Materials 503			Consumer Goods 383	Government 30
Services 27					For textile industry 93
Depreciation 32		Domestic production 988	Total turn-over 1062	Raw Materials 424	For other industries (clothing mainly) 331
Taxes on Business 36	Added value 438				
Productive Income 370					
		Trade Margin 94			Exports 255

I further present you a table (Table II) with a few of the most important characteristics of the industry and I believe the value of domestic production and the part that can be paid in taxes, wages and profits from business, would be interesting for you. Now the structure of different industries of course is not the same, and I give you some relative figures about some industries as well (Table III). The fact whether the raw materials are bought within the country is important for the financing, and this will differ greatly, but the total percentage of raw materials will not differ so much. You see that in different industries the relations between the amount of domestic production and added value, are very different. These figures show in how far expansion of your measured gross production really adds to your national income. The amounts that have to be set aside for depreciation in different industries also are quite different. A study of the addition to national income by different branches of industry and a comparison between them, especially if you make an industrial plan and see which would

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add more to your national income and to your standard of living as a whole, would be very useful. I know that it is not easy to do that, but as you see from these figures how different the effect of certain branches of your economic life is on the growth of national income and the standard of life, it is one of the aspects which can add to the value of your overall development programme.

TABLE II
SOME CHARACTERISTICS OF DIFFERENT BRANCHES OF INDUSTRY

Amounts in million guilders (1 \$ U S A = f 2.65)

Branch of Industry	Raw Materials	Total Turn over	Domestic production	Added value in %	Depreciation
Ceramics .	42	296	137	89	8
Diamond Cutting	116	24	24	7	
Graphite .	72	345	221	149	23
Building .	502	1,100	1,100	546	20
Chemicals	390	903	605	190	20
Timber	83	488	228	137	5
Clothing .	307	735	610	271	20
Leather, Rubber .	306	659	406	180	9
Mining .	195	655	405	243	40
Metals .	1,122	3,088	2,018	890	106
Paper	165	328	249	79	11
Textile	503	1,082	968	438	32
Public utilities ..	124	370	370	230	100
Tobacco	1	332	275	199	3
Food processing ..	2,395	3,280	2,822	761	50
Agriculture	559	2,243	1,722	1,201	120
Transport .	418	1,666	1,611	1,162	215
Shipping	342	660	660	257	93
Banking	12	175	175	155	12
Trade	235	2,839	2,889	1,211	70

(Adapted from a study by the Central Planning Bureau in Netherlands.)

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TABLE III
CHARACTERISTIC FIGURES FOR BRANCHES OF INDUSTRY IN % OF DOMESTIC PRODUCTION

Branch of Industry	Added value	Depreciation	Use of Raw Materials	Imports Raw Material
Ceramics	65	8	31	8
Diamond	29	.	67	56
Graphic Industry	67	10	32	.
Building	50	2	45	.
Chemicals	32	3	65	22
Timber	60	2	37	21
Clothing	44	3	50	.
Leather, Rubber	30	2	62	18
Mining	60	10	40	.
Metals	44	5	55	25
Paper	32	5	65	10
Textile	47	4	52	31
Public utilities	62	27	34	1
Tobacco	72	1	26	20
Food processing	29	2	71	31
Agriculture	70	7	30	3
Transport	72	13	27	3
Shipping	40	14	52	41
Banking	88	$\frac{1}{2}$	7	.
Trade	42	3	8	.

- REMARKS**—1. Some branches do use imported raw materials, but indirect through other branches (clothing, graphic industry)
2. The raw materials include ancillary materials, they are partly of domestic origin, partly have been imported. This will vary greatly from country to country, the relation between value of domestic production and used materials will vary less (except e.g., in agriculture)
3. The total turn-over includes trade margins, if the product is sold in markets which are separate from the production (not with building, public utilities, shipping, banking and many other services)
4. The added value is really the contribution to the nation's income. This includes depreciation on the capital invested, taxes and personal productive income
5. Depreciation is one measure for the capital intensity—a combination of the capital involved and the degree of wear and tear
6. Useful characteristics as regards the intensity of capital, labour including services and taxes, and use of materials are given in the last four columns, all expressed in percentages of domestic production.

GROWTH OF NATIONAL ECONOMY

Let us now look into the function of business especially when in our development schemes and plans, by certain measures or by certain actions from the population we hope to get more investment and more production. In the circulation of money, goods and services in the process of production something is added to the values that are available for consumption. If we would see it like a flow of water, flowing through a number of canals or tubes which are inter-connected then that water would not change its nature. If you would in the same way have tubes connecting household with the government and foreign countries, and change one of the figures, some other figures will change, but in reality nothing would happen. If households would save more, consumption would go down, and if reserves are increased, productive income would go down. But if you change the flow of productive resources in the form of labour and raw material into your economy, then something happens. There it is much more like the flow of blood, that puts something into your body while it is flowing through it. And by putting more investments in business you will find that the total productive income will increase, or that business can make more reserves and pay more taxes. So that by adding productive forces, productive elements to your whole system in fact it will grow and that is really what you are after in your national plan. Then you have to see in what direction it is growing and in what direction may be in other parts of the economy some elements may be decreasing. They are not growing all at the same rate, with the same speed and you cannot juggle with these figures and say, if our savings would be 125, how would be the equilibrium of our households, they would not be able to spend so much on consumption goods, so that would be bad for business which could not produce because the demand has gone down. But if those savings were put as investments in industry, then we see that the equilibrium for business is restored, because the savings go through the national capital account, through investment into business and consumption will be lower at the first moment when the saving is made, but very soon those new investments will increase the productive income that business is making, and if your investment has been a good investment, much more than has been taken out of consumption by more savings, is added to it. And the real growth, the real development of your economy, over a period of time can be studied. You can keep an accounting system of that and you can plan for the future by studying all these relations between the different parts of society. The aims of your development programme may be put in the form of production of so many kilowatt hours, of so much more textile, or you may bring them all under one common point of view, by seeing how and in what manner the different equilibria in your national budget are going to change and how and in what manner productive income is increasing and what the government is able to do more, by getting more taxes and investing more and in the same way you can see how your relation with foreign countries might change.

III Savings and Investment in S. E. Asia

As far as we have come now, we have seen money in different functions of economic life. We have seen it as a means to express values.

We have seen it as a catalysator for the exchange of goods and services, we have seen it as a reserve to cover future expenditure and we have seen it as a way to expedite and facilitate the formation of new and better combinations of elements of production. The common elements in all these functions of money is that there is a flow of money through society, in the opposite direction against the flow of goods and services. Everybody who for some time possesses money has the power to set that flow into action at the time and at the point which suits him best. Even in the case of the rural community where after the harvest, the farmer keeps money, he has the power to purchase at once, or if he wished forestall his purchases and buy later on.

SAVINGS, A REMEDY AGAINST HAZARDS

In all these functions—money plays a useful end in economic life. Because it is useful on the one hand and because the quantity of money is limited on the other hand, money has a price. The temporary use of money has a price. If money was not scarce, if money was available in unlimited quantities, then it would lose its function as a way to express values and prices and this is the first and one of the basic elements of the functions of money. If that happened, all economic life would come into terrible trouble and that sometimes happens in a time of extreme inflation.

You have then another way to express values, like after this world war in Central Europe, cigarettes were more stable money to express values than money. But when that happens the whole economic life is thoroughly disturbed, so money has to be scarce, it can't be available in unlimited quantities and, therefore, everyone who wants to have that power to purchase will have to pay for it. If he asks other people to get him that power temporarily, that means that he borrows, he will have to pay. As long as the people keep the money it is just potential power. As soon as they use the money, they exercise that power.

Now as we discussed already, in a more highly developed country, the possibility of highly valuable uses of money, especially in entering new combinations of elements of production are greater, than in less highly developed countries. And at the same time the organisation of financing of economic life in a more highly developed country is such that money capital can more readily be put at the disposal of an enterpriser or a would-be enterpriser. Now every body wants to have some liquid money, some liquid purchasing power, not only to make profit, but also to avoid serious risk. When I go on travelling my wife says, see that you take some money with you, just in case . . . if you drive out with your car, something might happen. The farmers wish to keep at least an iron stock of money to make possible within their own community exchange of goods and services. In this type of community, having reserves is rather important, because experience has shown to the people in the village, that the risk of flood or drought or crop failure by pests or diseases is extremely dangerous. Even so far that the life of the people themselves is in danger.

Therefore it makes very good sense that farmers and richer people in the villages, want to have a reserve of coins. They go to an extreme when very wealthy people just pile up gold and jewels and other treasury and don't use it for other purposes. The treasure for future needs is often not kept in the way of money, but it is kept in the way of large herds of buffaloes or cattle, just as an accumulation and as a reserve and then now and then they are used for sacrifices, in time of burial or marriage.

All this money and reserves kept is a saving, but it is not an investment and we will have to distinguish between money saving and investment.

INVESTMENT AND PROFIT

Saving itself is a good thing. What we need for economic development is investment. If we look at the rural community and look closely at it, we will see how difficult it is, to invest capital in that community. And we see in most places, if people have by some chance or some windfall or trade activity, a rather large reserve, about the only way to invest it is to buy land. And if they buy land, they will have to buy from other people, who have already cleared it and who already are using it. And this type of investment does not add much to the national wealth, or the regional wealth, because the people who are selling it mostly are under heavy pressure. They don't sell it unless they are forced to and when they are forced to sell, it means that they are under heavy pressure to consume the money they get. That goes in two or three stages, by advances or mortgages, until eventually they lose the land. But in the process of losing it and in the process of accumulating land in the hands of a smaller number of people, on the one hand that is what you may call an investment, on the other hand that is consumption of the amount that people get for that land.

What we now see in underdeveloped countries, as a common phenomenon from the effect of increased trade with foreign markets (this need not be in a foreign country but may be internal market, but rather remote from the village) is that an extra profit goes to the traders and not to the farmers.

(a) *Investment in trade*

The fact that the trader, the man who takes the initiative to start this trade, will get an extra profit is just natural. He in our scheme of the combination of elements of production is the man who invents, who makes the new combination—in this case the new combination of selling the products of the region into a more far off market. And the fact that the farmer most probably won't get a large profit and in many cases does not make a profit at all is derived from the fact that there are a large number of farmers and that mostly in an agricultural region you find a few traders asking for the product and a large number of farmers offering it. And under circumstances of a limited number of buyers and a large number of sellers who produce under very similar conditions, these sellers won't make a big

profit from that new combination. Now what does the trader in general do. He finds the new market and he starts for example to buy a forest product, or an agricultural product he can find. As long as there is no large movement to do that, the farmer who just happens to have a surplus, or the man who just happens to have gone into the forest and has the forest product gets a decent price. But now the traders want to expand their business, and start to finance the development in that village and in that region.

They induce more farmers and more people who go into the forest to collect barks or fruits or any other forest product or bamboos, by giving them an advance. They made a contract, written or not written and give some money in advance, on condition that they get the goods within so and so period in such and such quantity. They can mostly find lots of people willing to do it, because the money they get, comes into their household as something extra, at the expense of what is mostly labour that is not used all the year round. That makes it possible to get this extra product at a rather low price and mostly a good profit on this trade will be made, unless again the number of traders increases so much, that the traders won't get a large profit and the price declines on the foreign markets.

But that is mostly a long time off. And in the meantime that trader is progressively increasing his savings and he progressively wants to enhance his trade and there comes a real difficulty. We see in practice that after a number of years, he has come to his optimum business in this trade, because he cannot expand that at will. He has limited time. He has a few people only whom he can trust. He has to look after the people whom he makes contract with. He, therefore, can only have a limited number of contracts with farmers or people going into the forest. So when he has expanded his business till about the limit, he then will try to find other ways of investment.

(b) *Investment in land*

You will see that very effectively, when he feels that he has surpassed his optimum, when he is 55 or 60 years old. At that time he does not want to run so fast after all the people to whom he has given advances and to see that the product comes in and that the product is sold and the product is sorted out. So his age will induce him to reduce his business. He goes a little bit more easy. And then he wants to invest outside his business.

Now where would he invest? In his village? Buying land and becoming a landowner and by giving it out on lease again, is about the wisest thing he can do. I cannot easily devise any other way to invest his money. But in that way you see that with the introduction and the expansion of trade over longer distances, with better communications, with better marketing systems, social conditions in the villages do not automatically become better. They may even deteriorate. Of course their trade serves the country as a whole enormously. Without the rubber, the tea, the cotton and the jute, where would your country be. You need that very much. But now go back to the village and see what has hap-

opened there. There you find in the village community a limited number of people, trading in those export articles making profits and naturally making profits and then not knowing what to do with that money.

That is especially true in so-called underdeveloped countries, where saving by a certain class of people, does not necessarily mean investment in the most profitable way for the country itself. It becomes static, it may even be that after some time the government will have to start a programme of land reform. Land reform can become necessary because in the village community, this transfer of property from the farmer has created difficulties, which may become insurmountable. And if then government will step in with a Land Reforms Programme you come into the problem of channelling the compensation for the larger land-owners into new productive projects.

(c) Investment in industry

The obvious answer would be, to invest in industry. But the zamindar or larger landowner knows nothing or little about industry. Even if the Government steps in, new problems are created. If the landowner, merchant and trader want to avoid that and feel that their resources ought to be used in the financing of better economic development of the country, it is a large programme in itself to educate them to that attitude. First you will have to show them that there are three steps involved, and that they should go all these three steps.

The first step is just saving the money, the second step is investing the saving into new and better enterprises, the third step which is much more important and much more difficult is find out somebody who is able to invest and to entrust the money to him. One step in that direction is if a man buys land and gives it out to tenants. He then will have to see that he can trust the tenant, that he is an able peasant and that he will do his work and that he may be honest enough to pay his rent in kind or in money, so that as a landowner you are not cheated too much by your tenant. But the control of that agricultural enterprise, is easy, because living in an agricultural area you know what the yield per acre is and you know the acreage.

Then cheating is not so very easy and everybody knows that you must allow for some of it. And that this man is getting water and cultivates his land at the right time, are all things that are rather easily to be found out and people in the village would evidently know, if tenants did not use the land to their best benefit. Further on if the tenant does not get the best yield from the land, under certain circumstances, he himself will lose 50% of the gross return. But what happens behind the walls of a factory, even if the factory is close near to hand is much more difficult to supervise and to judge the ability of a man to do that behind the closed walls of a factory, a hundred miles away, is still more difficult. So the step to trust other people to invest your saving, is a very large and wide step to go.

DEVELOPMENT OF INVESTMENT IN S. E. ASIA

We will have look to our region in S. E. Asia and see how far these three steps: saving, investments of own savings and entrusting savings to other people for investment, are developed. The first question is, "What about the resources in Asia for economic development and what has been the history of the domestic saving and the domestic investments in S. E. Asia?" Let us go back a little bit into history and I know more about Indonesia than about other countries, so I take that as an instance

(a) *Saving and hoarding*

Then we see that in out of the way places, some 50 to 60 years ago, several types of saving, of buffaloes, of paddy of gold silver coins, and jewellery were found. You might have heard that a special road has been made during World War I through a valley in Central Sumatra, because in that region it was customary, to have at least 3 years of paddy consumption, near the houses. The Madurese and the Bahnese people and the people in the Eastern part of Indonesia, have hollow bamboos full of silver coin, so called 'ryksdaolder' worth about a Dollar before World War I. They had a large amount of that hidden in bamboos and somewhere in the walls of their houses or buried in the soil. It is interesting to notice how these savings, especially those in silver came there.

(b) *International trade*

The history of these hoardings in villages is very interesting. European merchants during the 17th and the 18th century, came to S. E. Asia buying spices and coffee, and about the only thing that they could bring in payment was silver. By the way that silver was found by the Spaniards in Mexico and other countries in Central America and brought in great quantities to Europe, even causing inflation there. The surplus of silver was shipped to S. E. Asia and came there in an already existing circle of trade. From Indonesia spices and other products were sold to India and to China, and as India and China at that time were the industrialized countries of Asia, Indonesia bought cotton from Malabar and the Coromandel coast and Chinaware and other articles from China. That was a regular up and down trade between an agricultural country and industrial countries in Asia. Europeans coming in with that silver, greatly increased that trade. The quantity of cotton goods and the development of the handloom industry in India and in Bengal, during the 17th and 18th century has greatly been induced by European merchants, who put up so called factories or trade establishments all along the coast from Goa in the West to Formosa in the East. They were buying industrial products against silver and brought those industrial products to Indonesia and other countries where there were agricultural surpluses and then brought the species and the coffee to Europe.

Well in that way they made very good profits on the silver, with the better and bigger ships they had and they could sell the textiles at a lower price, than the local Indian or Chinese were able to, so they more or less pushed that trade just by better technique and better and bigger ships. Much of that silver remained in Indonesia, because the quantity of products from Indonesia brought up to Europe was bigger than the quantity of industrial products bought. And that again we can understand from the conditions in Indonesia. People there were interested in silver hoarding. History tells that in 1860 on the island of Bali, at that time still an independent kingdom, they had a large stock of silver which they wanted to keep as a reserve, because Chinese ships came in only once or twice a year and sometimes there was a year when did not come at all because the monsoon was not good. When a ship came in from China they would buy all the goods from that ship against silver. So this accumulation of silver and partly gold, has a very interesting historic background and is very much related with economic development in that age.

(c) Limited influence of cities in Asia

The fact remains that villages are not the right place to save and to invest, it is done mainly in cities. And the reason is that agriculture is so predominantly determined by natural conditions, soil and climate, that almost everybody grows the same crops. Now combinations cannot easily be found or very soon are imitated by everybody. As against that in the cities you find, first *diversification*, different people doing different things. In the second place you find in the city, *specialization*, people doing one thing all the time, sometimes all their life and thereby creating special craftsmanship. In the third place you find much more than in a village, the preserving of secrets of trade and craft and thereby creating extra profit from a more or less monopoly situation. In the fourth place you find in cities short market distances, between people who produce different articles and that shorter market distances is one of the reasons for development. There are other favourable conditions like the *safety* of the city, probably it is more safe than the country side. Now in Asia the conditions of development by means of cities environment has been small until very shortly.

In 1930 only 31 million people in Asia, lived in cities of a 100,000 and more. Only 3% of the whole population of Asia, lived in big cities. In 1940 the figure had already increased to 60 million, not only because each city increased, but also because a number of cities came into the category of a 100,000 and over. There are no more recent figures for the whole of Asia but I can make a good guess, that now they will not be far from 150 million of those, because most cities doubled or trebled since 1950, and a number of cities came into that class of 100,000 and more. So what you find in handbooks of not even so long ago, that Asia is essentially a continent without big cities, does not hold true in the same sense.

If it is true that in the last 30 years, the population of all these Asiatic cities of a 100,000 and over increased from about 30 million to about 150, the whole economic and demographic situation has changed. There is one

thing still to mention and that is at first sight a strange thing and I am no versatile in these historical studies. The fact is that the big cities in Asia even where they existed seemed not to have had that dynamic influence on economic development that the cities in Europe had from the middle age onwards. The reasons for that will be interesting to study. There may be a number of reasons for that, but at least it is characteristic of the typical city in Asia, over the last 5 or 800 years, that it has been less dynamic than similar cities in Europe one of the reasons may be the relative great attention given to luxury consumer goods. But the fact that there were so few cities and that there is still an enormous amount of population on the land, at least until recently must have been a very retarding element in saving and investments and economic development, in Asia in general

(d) *Savings and national income*

Let us now consider how much net savings are available in South East Asia for economic development. In a publication of the United Nations¹ in the part contributed by the Food and Agriculture Organization—a figure is given of 2—3% of national income in India which itself may be estimated at \$60—70 *per capita*. In the U S A on the contrary, and in Canada and a number of countries in Western Europe, net savings amount to 15—20% of national income and that national income amounts to \$500 or \$1,000 *per head*. Even if we take a higher percentage for India, and take into account a higher purchasing power of the national income dollar for dollar, we still come to a figure of 2—3% as the percentage of *per capita* saving as between South-East Asian and North Atlantic countries

Now this figure of course is not at all a fixed item, it may become higher, but even if it was 10%, we must come to the inevitable conclusion that there is so much more capital available every year *per capita* that the highly developed countries will develop quicker than the underdeveloped countries. Over a long period of time there is no question of bridging the gap but of widening it. When we look into the income of the peasant in China in 1780, he had a better life, better food, better clothes and better houses than a French peasant of that period. With the industrial, agricultural and commercial development in Europe and North America, the real income increased in that part of the world very rapidly and of course now there is no question that the life, the real standard of living, of the French farmer is much higher than of the Chinese. One of the most striking results of a long period of successful saving and investment is the rise of productivity of labour and may be that is again a good measure-stick of the rate of development of the country. If only 1½%, something between 1 and 2% yearly increase of productivity of labour could be achieved, again, after long period of years, one or two generations, it might have doubled. And that has happened in Europe and to a larger extent in North America. But it is very difficult to achieve that aim in the densely populated and less developed countries in Asia. We, therefore, have to state that it is very difficult to get large savings and large investments and thereby an appreciable increase of the productivity of labour and the standard of life in underdeveloped countries

¹ Methods of Financing Economic Development in underdeveloped countries. United Nation, Lake Success, 1949

FINANCIAL ASPECTS

(e) *Little inducement for investment*

The second question is this, are the small savings that are made, properly channelled into productive investments? Here again the answer is, no. We have already discussed that an agriculturist within his community it *really* will find *difficult* to use money in new investments. Further more that reserves in products and *reserves* in money are in most areas necessary against the risk of nature so they have to be kept ready and cannot be channelled into enterprises of a longer nature. The third reason, which may be very important, is that the small groups of richer people—that also does apply in highly and not only in underdeveloped countries—have tremendous *social obligations*. Their high income and their wealth is partly derived from the high social status. As a landlord or a village chief, and in some countries as a haji, you have to show your wealth, you cannot be miserly. Even kings and princes have their obligations and often very large obligations. They have to show that wealth in the form of palaces, or in a large number of servants or temples. That is part of their social status and part of the ways and means to get a large income. And the foundation of that position would be shaken if they changed their way of life too much. That is a kind of thing that happens not only in underdeveloped countries, there are countries in Europe, where society, families have to spend large sums of money on the fact that one of the sons at least must become a shining but ill-paid officer in the army. I have a lot of friends in Asia with academic education who are always in financial trouble because a large number of relations expect them to help. That is very natural. That means that even if they have a rather high income they still cannot save much. Now investment in national pride or investment in social relations of one kind or another, may be very profitable for the person in question. Mostly for him it is ruinous, but we can say one thing it is not the optimum investment for the country as a whole. So generally, productive investment is for the reasons which I mentioned, a very difficult thing.

FINANCIAL INSTITUTIONS

The lack of financial institutions or the poor operation of these institutions is a further handicap for a rapid growth of investment. Partly, it is in itself the result of the low saving possibilities.

(a) *Savings Bank*

Generally a savings bank even on a co-operative basis, is no success in underdeveloped countries. Again it is not a thing to be amazed of. It is fairly costly to devise an administration system for the small amounts that would go into those savings banks. You might try to find out the relation between the average salary to be paid to a clerk and the average amount that would be invested, and be withdrawn from a savings bank.

Now savings bank operating among say, 80% of the population would at high cost collect savings from an economic environment where interest charges are high and invest them in a stratus with a higher development when interest rates are lower. It is like moistening a dry sponge from a wet brick underneath. The normal procedure would be and the normal procedure is that advances are given from the highly developed centres to the lower developed parts of society. 80% or 90% of the population is more or less precluded from a savings bank on account of the relatively high cost and on account of the relatively low rate of interest they can get from their investments. Savings banks can only offer a very moderate interest, even if you compare it with similar institutions in highly developed countries. I'll give you an instance which I know.

The Postal Savings Bank in Indonesia for about thirty years tried to induce people in the village to invest in the savings bank with very little success. Well, they gave only 2 4% interest a year, and they could not give more than 2 4% because they invested their own savings, in government securities which gave only 3%. Now if you are a village man and you have the choice between keeping your money at home or going to the post office to bring the money and going later to the post office to take it back at an interest rate of 0 2% in a month, well the choice is not difficult. However, it is of vital importance to organize it in one way or another and anybody who would invent methods to do this, would be of tremendous service to his country and to all underdeveloped countries.

(b) *Co-operative societies*

It was thought in the beginning of the century, that the only way to do it, was along co-operative lines, and there has been made a really tremendous effort to build reserves and to bring together savings from the rural population along co-operative lines. Those co-operative have indeed been able to bring together an appreciable amount of working capital, partly by introducing voluntary deposits, working mostly on the social feeling of people who had some money at their disposal, and partly out of profits which the co-operative society had been able to make because they were operating in a sphere with high interest rates and could undercut the moneylenders and outwit them. This outwitting of moneylenders is a very difficult job because those moneylenders have their business efficiently organized. But the co-operatives could make reserves from interest on the loans set out in the village. And of course, those reserves of incorporate banks are a saving also. Savings of that village community.

Now I am sorry to say that the co-operative movement in all underdeveloped countries and especially in Asia has lived through a number of very serious setbacks. The co-operative movement has been, I cannot say defeated, but at least has suffered greatly from a new and grave danger, that has almost arisen at the same time where the co-operative movement started. In all countries where you study the history of the co-operative movement you find a happy growth from the beginning till the year 1929

and then you find a serious drop because of the depression, because of the very low prices of all agricultural products. And then again you find some unexpected successes or even so-called profits by the inflation of the war years and after war years. But if you express their reserve and the savings in terms of shall we say, paddy, or in terms of the daily wages of the people, you will see that the real value of the assets of the co-operatives and the amount of savings have gone down since 1929, first through the depression when they had to write off in most countries a large amount of loans and secondly through inflation, which wiped out in some countries a large part of the savings of former years.

In old time the farmers' main enemies were flood and drought and in recent times the more dangerous economic enemies of inflation and deflation have been added. And this has been especially serious since 1929. Now it was possible to under-cut the moneylenders by reasonable interest rates, by publicity and propaganda, by honest administration and an appeal on the community sense of the people. But it was hardly possible to overcome that in 1933 rice was only worth 30% of 1930. Also it was hard to overcome the tenfold rise in prices on account of the inflation of the after war years. Many moneylenders have gone through the same difficulty but they could adapt themselves quicker than co-operative societies. Partly because they had less scruples against the people, they were lending to, and partly because they are by necessity more shrewd businessmen. They are more practical, they can adapt themselves quicker to changing business conditions than the best organised co-operative system. The import of the world business cycle on the co-operative movement of Asia has been detrimental.

And now I come to one of my well known theses. I should say that a reasonable stability of world market prices is a pre-requisite for a modest self financing of peasant agriculture and for a success of co-operative societies in the villages. If we could manage on an international and even on a national scale to stabilise prices of the main agricultural commodities, the success of a co-operative movement would be greatly induced. If there were no chances of such stabilisation, I would think that the future of co-operatives, and thereby the future of development of peasant agriculture, would be very low.

Now saying this I would not say that a co-operative movement is not very important in Asia, and I may at this point introduce to you, as far as is necessary, Mr Qureshi who is sitting at the back of the room. He yesterday came here and will take part in our course, and he has made a special study of these financial institutions and the working of co-operative societies. I believe he comes to the same conclusion that much will have to be done and something has been achieved, but not enough, in the organization of co-operative societies for financing agriculture in Asia.

I do not believe that we have reliable statistics on the number of societies and the amount of savings that they have brought together during their existence. If I make a rough guess I would say that there would be 200,000 co-operative societies in Asia and that those societies have about 13 million members (excluding China and Japan on which countries I do not have

figures. There will be a large number of societies and members also in China and Japan) It is not a small job to organize and have an administration for 200,000 financing institutions, to see that administration is done on efficient lines, that they are all run well. It is not at all an easy thing to combine their financial resources in higher financial institutions. It is not at all easy to finance them through really bad periods of depression and even through the yearly cycle of agriculture.

To overcome this all countries I believe have banking institutions to finance their co-operative societies. I have no figures at all about the total amount of capital that has been brought together by the co-operative societies. The International Co-operative Alliance brings together figures on co-operative societies, from all countries of the world in its year books and may be from those year books you could find the figures and statistics about the total amount of money that they have brought together. Surely, as compared to national income and the enormous number of farmers in the area, we have to say that co-operative societies have brought together only a very small amount of reserves and deposits and savings. Their yearly output is considerably larger than that and they do surely a useful job, but by nature and essentially you cannot expect from these co-operative societies a large accumulation of savings that can be invested in other fields of economic life. The co-operative society has a strong position as long as it remains working in the sphere where it draws its funds from, where the high interest rate prevails.

There is some investment of co-operative capital in industries or through some banking institution into the general economic life of a country, but this is not very important. If it could be achieved that co-operative societies in the villages finance sufficiently, agriculture and handicraft, it would already be a very important function. You cannot expect under the circumstances in which the village people live that they would be glad to lend out their small amount of savings and channel them into government securities, or into a deposit with a bank, where they got only a small percentage on their loan. Even channelling them into industrial enterprises is very difficult.

Something has been done in that field in some countries very definitely. Co-operative societies of weavers have brought together sums for a spinning mill and for dyeing yarn. Well that is vital for their enterprise, because they were spending much too high a margin, to the middle man who sells the yarn to their cottage industry. Similarly, I can imagine that a rice mill or an urgent factory for the processing of direct agricultural products is done on a co-operative basis. More again to lower the margin of the middle man than to try to develop an industry.

The main aim to be reached by the co-operative societies would be to lower the general rate of interest prevailing for small loans on short term in the village community and if that aim could be reached, I believe, we might say that they have done their job.

In most of the countries of South East Asia that would be the stepping stone into more capital investment and higher grades of development in the village and, therefore, we probably have to assess the merits of the co opera

live system in the village as to the way in which they have succeeded to decrease the prevailing rate of interest and the dependency of the farmers on the middle man and the moneylender

(c) *Private banks*

How far have private banks developed reasonably successful in underdeveloped countries in general, and in South Asia in particular? Here again I cannot give you any bright picture. Private banks as they operate in certain regions are mostly concerned with the finance of foreign trade, both for export and for import. Again this is a thing that we can understand. It is fairly easy because the goods are there as a security on the loan. The turnover is rapid, the loan can be had on a very short term and this provides a good profit. In fact most banks have started on that line. Most of the banks have been established in this part of the world just for this reason, to facilitate export and import trade, and this has resulted in the fact that the personnel have got acquainted with this type of business.

These are exceptions. The agricultural estates in Indonesia and Ceylon are largely financed by private banks and may be that applies to other large estates of agriculture as well. In Indonesia there are seven large banks operating in a large part of the country, both for financing trade and larger agricultural estates. These banks have special departments for the financing of these estates, with agricultural and technical advisers, and are well equipped for this job. But they have done little for the financing of industry, and I believe you might say that as a generality. I know there will be exceptions to the rule in all countries of Asia. As a generality we may say that in the region of South East Asia, very little financing of industry has been done through the normal private banking institutions. It can be explained from historical reasons. The British and the Dutch who were the main European countries to establish the banks are mainly trade people, and at that time, even they had little experience of what the banks in Sweden or the Dresdener Bank in Germany did for a systematic development of the financing of industry. So the people they sent out were not acquainted with the real technique of financing industry and, therefore, they neglected that field. I believe that the main reason why they did not go in that field was ignorance and not bad intentions. They did not believe in investing money into an industry because they did not know enough of the technique, nor the economy of an industry in its infancy.

What is badly needed is a training of industrial economists and industrial bankers who are able to assess the possibilities of specific industries. Some of the exceptions to the rule are a good illustration. Two of the commercial banks in Indonesia have financed the 1,000 rice mills on an industrial basis, and quite efficiently, but these two banks had specialists developed for that particular job and without such specialised industrial bankers, the private banks cannot finance industry without great risk.

INTERNATIONAL FINANCING

So far in our considerations we have treated the financing of a country as an entity without regard to its foreign relations. We now will go into the connections between the financial system, and the savings and investments of a country with regard to foreign capital. Now in principle of course, any country may in this financial relation collect investment or it may push out investment. The natural position for an underdeveloped country, which wants to develop rapidly is that it would attract foreign capital.

(a) Advantages of international link-up

Savings that have been made in other countries where people like to invest in a foreign country, because this promises them the best prospects, may add to the capital, available for that new country and thereby increase the national income in the country that uses that money. The fact that connections are made between the banking system of one country and banking systems of other countries in itself is a profitable thing. It is something like in electricity, making a grid, where you connect different power stations and use the power where it is most useful.

Savings and use of capital are not going on in the same pace and in the same season all over one country and therefore a national grid, a national banking system, is useful and in the wider field of international financing it is still more useful if you can connect the different financial resources. They then will flow into those places where they can most usefully be put into action. Now when I say this I know that there are all kinds of financial regulations and difficulties and that the international grid system in the field of financing and banking has been very largely destroyed by the effects of the World War. We then say that there is inconvertibility and that there are all kinds of government regulations, preventing the flow of capital and money from one country to another. Before World War I, there was a rather widespread free system of international finance. There were very few, if any, government regulations as to the use of capital and money in one country or another and the linking up of underdeveloped countries in Latin America, Africa and Asia, with the central generating plants for capital (that time mostly in London and in Paris, later on for a large part also New York), itself brought about quite a number of new possibilities and thereby new investments.

(b) Influx of commercial capital

I should like to say that, historically, the first influx of this greater supply of capital was mostly commercial capital. Later the enterprises, considering risk and profits, found it a good thing to invest, not only in import and export trade, which is quite natural for commercial capital, but also largely in agricultural estates in some countries, in mines and in commu-

locations, railways and shipping lines in other countries. As you are well aware, in Asia, relatively a small part of that foreign capital has been invested in railways. In a country like Argentine, you find that almost all the railways have been built by private companies from abroad under conditions of a free flow of capital goods and no barriers against such flow from one side or the other. It is a natural thing that private capital should find the place where it could be used most profitably for the investors. I would not say that that means that this use is also the optimum for the country and the people where they invest the money. They have got their resources by the confidence of people who save money and capital in their own countries. If at the same time that would be the optimum use for the community where that capital has been placed, that would be a very fine thing, but it is not always so. The same situation holds also for domestic investment. It may be enormously profitable to invest in distilleries or in perfume factories, still it may be for the country as a whole, better if it was invested in electric power and not in spirits or in perfume. Well of course you can have the same thing with foreign investment.

(c) *Capital investment in primary production*

We can divide the capital that is coming in a number of classes and I want to give you a short description of a few of the important types of investment that have occurred. One of them and that is an old form, is investment to promote the production and the export of raw materials. This type of investment has been a very important one and it has added greatly to the whole trade movement in the world, and the production of raw materials and foodstuffs. Shipping lines, ports, railways, agricultural estates have been established. If you go back in history 70 or 80 years ago, you will find that the prospectus of institutions investing in Argentine, Russia, Chili or Indonesia, were mostly all based on these lines. "These countries have tremendous possibilities of copper, of wheat, or of rubber, and the world needs them so that is a good investment."

This investment, if it has to go on successfully in many cases has to go further inland. You invest may be in the first place only in a shipping line, and build a few houses and put a few people in a country and you then start the buying of products. Later on you will have to make railway to connect the interior parts of the countries with the ports. Then later on you will have to start and invest yourself in developing the jungles into plantations. Then may be again, later on, you will have to finance the processing industry of that raw material, because the form in which it comes originally from the estate is not suited for the world market. With the specialisation and the higher grades that are asked in world market, this type of investment has created in some countries one of the best equipped and best organised branches of agricultural and mining industries. The tin mines of Malaya and Indonesia, sugar in Hawaii and Java, rubber estates, palm oil, fibre estates on Sumatra can compare favourably with almost any other type of mining or agricultural industry in the world.

The world market was asking ever increasing quantities and an ever increasing variety of products and was putting every increasing demand on

the quality of the product. That made it necessary to increase continuously the capital investment. Now this is a very natural development but at the same time it has created in a number of underdeveloped countries ill feelings against this kind of investment. Here again we can understand this because the rate of technical and economic development of this type of private investment, was quicker than that of the people in underdeveloped countries. And it would seem as if there was an increasing backlog between these industries and the capital extensive industries of the local producers. The people wanted to have a greater share in the possibilities of development. If we try to see that objectively, we will have to state that the high state of production, by the foreign enterprisers in a country was accomplished by the import of the results of science and technique which at the same time, could not be transplanted at the same rate through educational measures on a national scale as was possible within the commercial enterprise itself. This is one of the basic advantages of private industry which all good wishes and all political pressure cannot change.

(d) *Industrial investments*

As a third stage, after the raw materials trade and agricultural industry, there has been an influx of *industrial capital*, and here you find overseas plants of big firms from the United States, which in this field have been the large pioneers, and from European countries. When they set up an overseas plant in a certain underdeveloped country, instead of importing the ready article they imported the parts and put them together in an assembling plant. For the firm that does it, it is a very natural thing to bring all the technical ability, all the organisation, all the results of scientific work directly to their own assembly plant. What is done in enormous laboratories and testing fields to the extent of may be hundreds of millions of dollars comes in finished form and without any payment for it, directly to the overseas plants. Well surely, Ford and Shell and similar big companies when they calculate how much they might spend on their laboratories and on their testing fields, will take into account also their sales in other countries, and the profit that can be made by their overseas plants. But they do not charge the overseas plant directly.

No private firm with domestic capital in an underdeveloped country could possibly produce itself these technical and research results. You may try to buy it, but then you will have to pay an enormously high price. A government may try to engage foreign technicians, but at the moment that a foreign technician enters the government service, he is cut off from his own scientific resources. In my opinion, this is one and may be a deciding factor, why in certain fields, not in all but in certain fields, it is cheaper and of better interest for an underdeveloped country to allow overseas plants in the industrial field to be set up and to profit fully from the discoveries and inventions made, e.g., in the enormous laboratories of oil refining companies, of automobile companies, of agricultural machinery companies, of chemical industries, of steel industry and electronic industries. Especially in the United States but also in a number of European countries there are enormous amounts of research done that are used in Asia.

I believe that this scientific division of labour has advantages which we should not easily throw away. If people from abroad would come and invest without such a good management and research behind them, then the things would be very different, because then most probably these people come for a quick profit and probably will run a big risk but will take this large risk for the chances of a big profit. But as private enterprise, at present times, in the highly developed countries, is organised, you have a very good chance that in this way you may introduce at a low cost the results of long and serious work and very specialised work.

Now capital as it comes in the three ways we described is mostly, nor always, what we call active capital, share capital. The people that are investing are for themselves risking the whole amount of their investment and there is no obligation from whosoever in the under developed countries that they will get a profit or that they will even get their capital back.

If you get capital or any other service with such a risk you have to pay for it, and if those investments have been a success, you see that they make a large profit and pay a large dividend. On the other hand there are a lot of investments where we do not see the results because they are in the meantime abolished. To give you only one instance; Indonesia is not a good country for gold although there always are rumours that there was a lot of gold to be found. In this country there has been more invested in companies for gold mines than all the gold that has been produced by all the successful gold mines.

(e) *Loans in capital market*

There are other investments and they do not bring such large returns but on the other hand do not involve the same risk. This capital is given out in bonds, mostly by a government. The government of an underdeveloped country can raise foreign resource, foreign capital in the way of bonds, in the foreign capital market.

In this case you have another picture. The most important thing I believe is that the initiative is different. Here people do not bring capital to an underdeveloped country but you take capital from a developed country into your own country. And the risk of the investment is with the party who takes the initiative. He has to pay an agreed amount of interest and an agreed amortisation and if the investment is a bad investment it is bad for him. Under certain circumstances, that will also be bad for the man who invested it, because even after promise of interest and amortisation may be he does not get it back. The responsibility however is with the man who raises that capital in an open capital market and the reason why mostly only governments can get it is, that the foundation of this type of loan is not the technical qualification of the enterprise that is going to be started, but it is the confidence of the people who have saved and want to invest their money in the agency or the government that asked for the money.

And the price paid for it is directly related to the confidence that the borrowing country can create. There has been a time where some countries could get no money even at seven per cent, at the same time there were other underdeveloped countries that did get it easily at 3%. It was not because the economic possibilities differed so much but because there had been difficulties in payments of amortisation and interest and the countries that could get it much cheaper, had a good record of payment. Therefore, if you are planning to raise money through bonds, then the first thing is to look through the record of your country's history and see whether you have the confidence of the financial people, that are taking up those bonds.

Such bonds could be placed in the open market and that has been the practice in very many countries especially in the beginning of this century. But the possibility of raising money in the open capital markets in the world is very low at present. The confidence of the people that would have the money available is very low. On the other hand, if the interest rate would have to go so high that you overcome even their mistrust then most probably it would not be any more profitable for the underdeveloped country to raise that loan. Nobody can pay 8 or 10% on a loan for developing roads or for railways or other development programmes. So if a government would raise foreign capital in the way of participation by private banks and private investors, the amount of capital to be raised would be very small. This is still one of the tragic results of two World Wars and an enormous depression in the thirties.

(f) *Loans from government to government*

The great system of capital and money markets in the world has been disrupted. Therefore, since World War II a new way of financing economic development by foreign investment had to be found. These are systems which are still in course of development. We cannot say that the right method has been found to large amounts.

One way is that it goes from *government to government*. It has become a practice that loans are made from one government to another. The reason is obvious, a government sees better than a private investor or a private bank, the necessity for an underdeveloped country to get a loan for its development. And in this case of a government to government loan, the responsibility is shared. The private bank and the private people who lend the money to their own government, sometimes are not even asked to do that, the government just forces them to save by taxation and raising internal loans. And the risk of getting the amortisation and the interest is shared by the nation as a whole through their government. It is much easier to get the confidence of a limited number of well informed people in high government service, in a state bank or in a federal reserve bank or in a special organ like the Export/Import Bank in the United States than to get it from the private investors which are a large group and which will easily come under the impression of bulletins in newspapers and rumours.

That is the reason why government to government loans can be made at less expense than loans in the open market.

(g) Loans from international agencies

A type of loans which especially aims at development are the loans made by international agencies to underdeveloped countries. The World Bank is one of the important international agencies set up specially for this purpose. Here again you have a similar picture as with the government to government loan. In this case it is necessary to convince a limited number of rather well informed people, specialists in this field, on the soundness of a scheme and the possibility of paying back, and give them confidence in the financial stability of the country. This decreases the price you have to pay for that loan, although I would not say that the World Bank for that reason will charge a different rate of interest from different countries. The World Bank itself relies partly on capital furnished by a great number of governments and partly on the open capital market.

Here you have that same intermediate stage between the countries that need loans and the open money market. These agencies have no power to force, savers, investors, banks, in the countries where they raise the money, to grant them the money. A government can do that, whereas the international agency cannot do that. So the international agencies still more than a government will find it necessary to create a feeling of confidence for themselves in the open money market. The World Bank would have to stop its work, when in the large money markets in the United States and in Canada and in Europe it was considered that a number of loans had been made without a sound foundation, and the prospects of self-financing of these projects were not good. If the World Bank could not transplant its own confidence in the projects and in the plans into the big capital markets, the capital that is furnished by all the governments in the world would not be enough. In fact the World Bank has had to raise a certain amount of capital in the capital market, and the bank is proud of the fact that in the open market the bonds issued by the World Bank are rather highly appreciated.

The soundness of the plan is a basic condition for capital to be brought through an international agency. A government may give the money at a low rate of interest even if it cannot convince private investors that it is a good proposition. It can force its own nation to join in that endeavour and may be there are important reasons to do that, but it is not in the power of an international agency to do it.

(h) Mixed financing

Finally, I have to mention a hybrid form of financing which is increasing, rather largely, in recent periods. That is a kind of mixed financing, of *participation* in an enterprise by foreign investors and domestic investors, by private and government interest. This hybrid may well like it in the case with hybrid corn prove to produce a very good result. The hybrid form of mixed finance will have different origin. It may be, that private investors, liked to sell part of their interest to private investors in the country where the project or the enterprise is located. British private shareholders have

sold in recent years quite a large number of their shares to Indian people. They believe that this kind of selling part of the shares to interested people within the country will produce more protection to their property, more security and more sympathetic consideration of their interests by the people and the governments concerned

Another way of participation is again with the initiative on the other side, where private people in underdeveloped countries that want to make a new investment, themselves go out and try to find the participation of a well known firm abroad. In my own country in Holland, there are in recent years a number of people who have brought together some capital and have deliberately invited American firms, to take their share in the capital. If that share means that from America they can get the equipment on credit, with the scarcity of dollars such participation sometimes means the only possibility to start. I personally believe such participation would be a good thing for quite a number of industrial enterprises that could be started in this way much quicker than in almost any other way. Because you have there co-ordination of the partnership in your own country, with modern equipment that you do not have to pay and which does not burden your balance of payments at the time you get it.

In a similar way the *government* could start a *mixed corporation* and induce participation from its own citizens and may be from international agencies or foreign governments or foreign private firms. There are a number of possibilities in this form of mixed financing and it completely depends on the type of development project that you have in hand, which form would be feasible

IV Financial Planning

METHODS OF FINANCIAL PLANNING

There should be in every country a centre for financial planning as well as for economic planning. These agencies may be independent of each other, or integrated, but they should at least be interrelated.

Financial planning partly is in the hands of the banks and the state bank as a supervising, co-ordinating and controlling financial centres. This part of the planning operates through regulation or control of interest and discount rates, of credit and of money supply.

The government in most countries has a say in this planning by banks, but apart from that has a great influence on the financial situation and financial planning through other means.

(a) *Issue of money*

We have come now to a very important function of banks and this does not include only private banks but first of all also the State Banks in different countries. This function is very important for the financing of economic development and economic life as a whole. I mean the creation of money.

I cannot go of course into this very deeply as this is a very important and very difficult subject. Money can be created in different ways by government, by State Banks, by private banks. We can distinguish between notes issued by the circulation bank or state bank or sometimes by the government directly and the money created by credits opened by banks. The banking mechanism as it has been developed in more developed countries in the last four or five hundred years makes it possible to create money and also to annihilate money. The total amount of money that goes in the circle of business transactions, savings and investments can be increased or decreased. Banks have got the possibility to do this and thereby have enormous influence on the economy as a whole and on any programme of development.

Now I do not say that a discovery was made but at least some experience was gained in Europe a few centuries ago. In the use of this power to issue notes and to give bank facilities which increase in fact the amount of money in society, a number of terrible mistakes have been made. It was believed at a time that by issuing more money you could increase the assets of society. The reason is that if we start from a certain basis of equilibrium and slow development and you push money into society, then the whole machinery will go more rapidly. You can compare it with a car. If you give more gas, you go faster, but if it is too much then you get choked and you get no where. In a similar way any too large expanding of money in circulation in proportion to the needs of society is most dangerous.

I am not going to talk about these dangers with you because the tremendous dangers of inflation during and after the war in a number of countries in South-East Asia surely have given you some unhappy experience of inflation. So now everybody agrees that inflation which might be created by too much money, should be avoided at all price. You cannot even buy economic development at the expense of just a little bit of inflation, because if inflation goes on, you will defeat your purpose of economic development. The State Banks in former years in many countries had only an indirect power to fight the dangers of inflation, but the powers have gradually been enlarged and the State Banks now are very powerful in this respect.

A similar danger on the other side, though that is not a very active danger at the moment in new countries, is deflation. At a time when there is not enough money in circulation to keep trade and economic life going, you get a slowdown of the whole process, again resulting in very bad economic conditions. The duty of the State Bank is to see that the amount of money, both the money in notes and the money that is created by banks outside the note circulation, is insufficient, that it is not in excess.

This is really the place where push buttons are where economic life could be accelerated if necessary or where it could be slowed down if necessary. Both functions are equally important.

Now let me give one point which is most important in all our calculations and in all our planning. Governments in their investment plans are for the banking mechanism as a whole, both state bank and private bank,

just one of the customers of these banks. Governments may save and put their savings in banks and governments may invest and governments may take credits, governments may go into debts against a state bank or against a private bank. Now again here experience has shown that it is most important to safeguard the mechanism of money taken as a whole.

(b) *Interrelation of economic and financial planning*

You might say, well this is economic planning and in financing that planning you may expect that governments have the utmost wisdom. They will know, because they have qualified people in government who know about economics and finance, they will not create or induce the bank to create too much money. Here again, experience has shown that governments are not always wise, that they are under political pressure or that they are on the pressure of war, or just that governments fail to have an integrated financial and economic policy. The result is that they ask the state bank to create more money to finance government expense. The state bank ought to be independent enough to deny such request, if necessary. And in this respect economic planning and financial planning of a government must go hand in hand. There still are a number of countries where this co-ordination between economic planning and financial planning, is not at the optimum and that holds, I believe for both sides.

State Banks in the law, whereby they have been set up, in quite a number of cases have on purpose been made independent from the government. In view of experience of the past and experience in other countries, governors of state banks, or board of directors often do not know enough about the economic plans. If they believe that the government does not have a sound financial and economic policy may be, by being too cautious, the state bank can hamper economic development. In most cases the State Bank may have been right, but sometimes it was wrong.

Anyhow, it is essential that in any financial plan, in any appraisal of the financial possibilities of economic planning, the relationship between economic planners and financial planners, is well established. I suppose that in new countries the dangers are more on the side of inflation, especially at a time of high prices of raw materials but you cannot have sound economic planning without co-ordination of financial planning at the same time, and the co-ordination of the two ends largely up in a degree of expansion or contraction of the total amount of money flowing in society. I know I am over simplifying the case, because there is no direct relation between the amount of note issued and the amount of money in the banks with the need of society measured in national income or in the value of production and consumption. The whole process is complicated and in all countries, economists and financial people are still working out the yardsticks of economic life in order to have a better forecast for the future, that may give more stability over the following period, by regulation of money and credits. We have not yet achieved this complete safety.

Even in the United States as you have heard Dr. Singer and from Dr. Ezekiel, with its large number of economists and financial experts still

forecasts and predictions as to the volume of economic life and the usefulness of expanding or contracting money in circulation, have failed in a number of cases. By better statistics and by better analysis of some indexes of future development there is a continuous refining of this instrument in planning for the future. As I have said, government, rather often, are the bad boys, in this respect. But it is also very well possible that the combined action of private investors or the inactivity of private investors, or an excessive action of speculators in private business sphere also create these bad effects.

(c) *Sound budgetary policy*

Governments often have for consumptive purposes, for payments of salaries to their officials or expenditures on army and navy spoil the equilibrium and therefore as one of the first pre-requisites of a sound economic development in a country is a sound budget policy of the government. I would not say that the sound budget policy, must always mean a balanced budget. Governments have learned and economic theory has taught them that a government may, by its budget policy, by its taxation and its expenditure help to stabilise the development of the economy, and avoid the two stages where the economy is out of its equilibrium, inflation and deflation.

One of the ways to define the two can be given in words that we have been using in the last two or three lectures. You have savings and you have investments, and you have prospective savings and investments. You may expect people in the next month or in the next year to save a certain amount of their income and at the same time you may expect under certain conditions, investors and enterprises to invest a certain amount. Now we may say that deflation is likely to occur if prospective savings are larger than prospective investment. If prospective savings are not enough to cover prospective investment you have first inflationary pressure and you may very well end up in inflation. Now you see the importance of this definition. In an underdeveloped country where the amount of saving as we know is low, and where you wish to develop the country economically, and to have large investments, you are bound to have inflationary pressure, and a government ought to have a surplus, because if a government makes heavy a taxation and does not use all it gets in, that is a forced saving.

Under voluntary saving, people keep money in a savings bank, but by taxation the money remains in your treasury. The community as a whole, saves. In the same way, in times of deflation, governments are advised to have a deficit. That means a balanced budget in all circumstances as a whole. Unfortunately in many countries under political pressure or out of sheer necessity many governments have a small deficit in time of inflation and a large deficit in time of deflation.

If a government has a deficit all the time, it will have to draw from the national resources and this may be financed by the state banks or private banks or the issue of more money, whereby everybody in the country

will get a larger amount of bank notes but the bank notes will not be worth what it was. By this creation of money, you cannot create an increase in the amount of goods and services, of capital goods or consumer goods, in the country. That amount of goods and services can be increased only through the development of investments. If you just draw upon the credits of the state banks and from private banks for consumptive purposes, then you are like an underfed man, who lives but in reality consumes his own body. If that happens in national life a national disaster is imminent and often in the history of countries, very drastic measures have had to be taken to stop the ever increasing threat of inflation. A sound budget is the first duty of a government in economic development to give the people in the country confidence to increase savings and investment harmoniously.

(d) *Taxation policy*

A government may by its taxation policy, by a wise or an unwise taxation policy, greatly induce or reduce the confidence of the people to make savings and the possibilities of investment. Some taxes, duties or excises increase the cost of production. Other taxes decrease private consumption. We all agree that a certain amount, a certain percentage, of the national income has to be used by the government because the government itself creates the social order which is indispensable for the maintenance and the development of economic life.

Now the taxation itself, the choice of sources of taxation, has a *selective function*. May be a very heavy tax on a certain consumer good that article will not be produced any more. There are instances that by a very high tax on tobacco or on alcohol, consumption and production went down so considerably that even the total amount of excise decreased in spite of the very heavy rate. Similarly, by differential import duties a government can influence greatly the desire of investment in certain branches.

A similar thing you have with export duties, which are much in favour in underdeveloped countries at present, and which seem to fit well under circumstances, first of all of not too large differences in the cost of production between producers and secondly of course in times of relative high prices of a certain foodstuff or raw material. The fact that the government is imposing a certain export tax on rubber or on tin or on jute or on cotton, again creates a selective action in the way people are going to invest capital and labour. If you tax cotton too high, people will find it more profitable to grow wheat or sugarcane or any other article that is not taxed in that same way.

So taxation policy may very well, if there is not a good co-ordination between the economic department or agricultural department and the financial department frustrate the aims of the economic department. Unfortunately, but as a necessity the government just cannot promote all economic activity by no taxation at all. That, of course, is impossible. The government will have to find the money somewhere for its own expenses and, therefore, taxation policy has primarily, a selective function.

in development policy. Even if the total amount to be got by taxation has been fixed at the right level through a budget policy, it still would be possible by unwise taxation policy to put the burden in the wrong place and thereby frustrate development. To develop a wise taxation policy for underdeveloped countries, again is not an easy thing, because the number of sources where to find the money is so limited

(e) *Financial inducements*

There is a third important function, a function of increasing importance for governments with regard to the financial aspect of economic development, the use of inducements to development. They are, so to say, the counterpart of taxation. Instead of not levying a tax on a certain branch of industry, or a certain type of income, an economic activity, it is possible for a government to give positive inducements. They might have the name of a certain tax exemption. The government may say that a new enterprise for the first few years does not pay an income tax. That is a positive inducement for investment in a certain branch or in all branches of industry.

The counterpart of export duties are subsidies a government may give an export subsidy, or a production subsidy, and the government, again can do that on a selective basis. It cannot of course subsidise all economic enterprise or all branches of agriculture or all types of industry because the money has to come from the treasury and has to be brought together by taxes, so again these measures have a selective influence.

The rule is in most countries that in the inducement policy an economic department or an agricultural department has much more say than in taxation policy as such. In many cases the decision to give the inducement is so to say a compromise between the economic department or agricultural department and the treasury or financial department. The treasury often finds it much more easy and can contain the cost of the measure if it acts on special proposals from the economic or agricultural ministry, which have to bring up the case and explain in detail the reasons why the government should give a tax exemption or a subsidy or a financial inducement to a certain branch. If there was a 100% co-operation between the two departments and if the administrative regulations to carry out the legislation were adequate, it might be possible to find it solely in the field of taxation policy.

When you are in an economic department and you are planning for certain developments, it may be necessary to approach the financial authority and ask for inducements, and you must have your arguments ready. It has been an economic slogan a long time that such type of inducement must be wrong because a type of industry that grows under that inducement is like a plant in a hot house and at certain times the government will be compelled to move the hot house and the plant will freeze, and will die, and it is much better to just start from the beginning in the open air and then it will be sturdy. There is of course the danger by giving too

much inducement, you make people lazy but as a generality this slogan is not true. It may be, especially in the conditions in which we live, under certain monopolistic or quasi-monopolistic marketing systems, necessary to overcome initial difficulties and to induce people to start a new industry.

It is possible to give financial inducements, in one kind or another for economic development and that has also been recognised in the General Agreement on Tariffs and Trade (Articles 13, 14, 26 -- 28 of the Havana Charter). Privileges for inducements, subsidies, or other financial inducements have been given especially to raw materials and to certain industries in underdeveloped countries. Especially, if necessary or useful for the development (and reconstruction because reconstruction after the war is put on the same footing as economic development) of certain industries, the General Agreement for Tariffs and Trade provides for such special inducement.

So it is a more or less internationally recognised practice. Well I need not stress the fact that overdoing is bad, but it is a method that can be used in a number of cases.

(f) *Regulations*

Number four in our list of Government help to savings and investment are a number of regulations and laws for economic development. Dr Singer has told you a lot about that and Mr. Clawson is telling you more about the way of how a government by rules and regulations, legislation and administration can carry out economic development, but I am talking now about financial regulations.

You may have them in different ways and one of the common ways is a regulation about *usury*. That is more or less a negative way, by saying that you do not allow anybody to take an indecent high percentage of interest from the people. It is a regulation that has been necessary and has worked to some extent, to avoid that people come in the power of money lenders.

Such type of financial regulation may also educate people to a better financial husbandry. If it would only work negative by denying or submit certain transactions to approval, you cannot expect a lasting effect on economic development. If however, at the same time, it works as a means of education, to use the money in the right way, it may have a very good effect. And there again we see that such regulations sometimes fall under the social department as controlling usury, sometimes come under the financial department, sometimes come under the economic department.

Limitation on certain types of credit, even direct regulations on the expansion of certain types of industry come under this heading.

(g) *Direct participation*

Now I come to point five in our government policy and that is government participation in economic development. The government can use

part of the national income that is entrusted to the government, in the field of investment when the government itself participates in economic development — Often there is a political question in a country in which field they will expand a government investment or not

If a government wants to go into a programme of participating in enterprises to further economic development it can do that essentially by two ways, it can do it directly by forced savings that means low consumption in the country and high taxation or it may be indirectly, although in the long run the result is the same, by borrowing, and using that money in economic development

Government participation in a sort of enterprise we can again in principle divide into two categories. It can take part of the capital investment in a certain enterprise or the whole of it. If a government goes into it 100% we call that state enterprise. Now there are different reasons why there are state enterprises in nearly all countries. Some of those reasons have a security or political background. Now I do not talk about those. They are not based on economic reasons, although I agree that security is one of the highest assets of the country.

But if I would give on economic grounds certain major rules about state enterprise, I would say that it is useful in the following cases —

- 1 If our public enterprise is of a more or less *monopoly character*. Under those circumstances, the largest profit can be made rather far below a point of still reasonable profit and a very much larger benefit to the society as a whole. It may even be that such an enterprise has two maxima of profit, one on a high capacity and the other of a low capacity, and the danger always is that private enterprise may choose the low capacity and ensure a large profit and the public enterprise is more inclined to choose the higher equilibrium.
- 2 The *pioneer enterprise*. It may be that private investors just fail to take the initiative and that the inducement which a government might give can bring them into action and the pioneer enterprise by government might very well set the example.
3. That a government really can produce *better management* from a business point of view, a better management than a private investor. This third possibility is oftenly denied at least in my country in Holland it often was said to be impossible. As far as my personal experience goes in under-developed countries I can imagine that a state enterprise is more efficient than a private enterprise. I believe it is a rare case, but it can happen, and, therefore, these three criteria I would set as economic criteria of state enterprise.

Now the government also can *participate partly* in private enterprise. This is a way to get the advantages of state enterprise and private enterprise at the same time, and is specially designed for the third group of cases. The desire to combine public service, pioneer character and the best possible management, is the reason why, in a number of countries, so called *development corporations* or public authorities are set up. There you try to combine private methods of management under some government control, may be

government auditing, and at the same time financing from public expense. So development corporations and similar institutions which have been made in quite a number of countries in recent years are so to say a hybrid between state and private enterprise. From the point of view of financing, they are state enterprises, because in most cases, they are wholly or largely financed by the government. So there you see that government and parliament have tried to find ways to combine a policy of government investment for the public welfare and at the same time the method of private management, which may be better for the efficiency of the whole business.

Another way of participation of government is to *subscribe a certain percentage of the capital* of a new enterprise. That is a device that in history in quite a number of cases has occurred, especially where the pioneer character of the enterprise, comes into effect. If you go back in history, quite a number of at the moment completely private enterprises, shipping lines, railways, banking institutions, quite a number of industries in Europe have been started by a participation to some extent by the government and they have grown out of that cradle that the government has laid them in. I know in most European countries especially on the European continent, quite a number of instances where it has been a very good tradition to start pioneer enterprise with a great risk, risks too great for private people who just did not dare to start it.

Dr Ezekiel the same applies to the United States and Canada.

Well that adds to the argument that this kind of participation is good in quite a number of cases.

DOMESTIC AND FOREIGN INVESTMENT IN FINANCIAL PLANNING

Let us now consider the influence of foreign capital on the economic and financial structure of a country over a period of years. First of all I should say that if somebody has brought through an investment from abroad or a loan made by a government, new capital which enables the country to build a new factory, then in its direct economic function it makes little or no difference, whether you bought it from your own reserve or whether it is an investment from abroad. There is on a dam or a railroad or a tractor no tag, whether cash has been paid directly or not. It becomes part of your whole economic framework and as such it is just another addition to your capital asset, so you cannot unduly divide your economy in domestic and foreign parts. But when it comes to payment there is a difference and therefore, in the financial field we have to distinguish more than in the economical field.

(a) Structure of balance of payments

I like to give you a summary of the more important items of the balance of payments, only the most important ones which we will need in our further analysis and I don't pretend to be anyhow complete in giving you all these items that come under the balance of payments. A manual to set up a

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balance of payments on certain general lines for all the countries in the world had been published by the International Monetary Fund *

Simplified balance of payments

	Income	Expenditure
Merchandise	Exports	Imports
Transportation	Received	Paid.
Banking and other services	Received	Paid
Investment income (interest, dividends, profits)	Received	Paid
Depreciation	Received	Paid
Capital movement	Investment from abroad	Investment abroad.
Amortizations	Received	Paid
Balance	Minus	Plus

The balance is to be made up by gold movements, or short term credits, obtained or given

If you cannot make up the requirements of foreign currency from imported capital and loans raised, then that can cause you heavy losses on your future balance of payments. If in the meantime the capital that has been brought in, won't raise from the very beginning from its own resources, enough to carry this demand, that itself is going to make temporarily a burden on your balance of payment. It may be possible to finance your development through this period, with assets on your current account and that, in itself it is not a thing to be afraid of. If only you see that the relative figures in the balance items are sound and good, in the long run, there will come a period when accumulated capital, will give accumulated amounts on your balance of payments, for interest, dividends, depreciation and amortization.

(b) Balance of payments and loan services

Let us assume that the government raises a loan, outside the country. It gets a loan from another government or from an international institution. That loan has to be repaid and interest on that loan has to be paid. Now in order to see what the effects are through a longer period of a number of investments in your country, we have to put them altogether in one balance

* (Balance of Payments Manual I. M. F. Washington, January 1950)

sheet with the other financial transactions, which the country has with foreign countries. I would warn you that in this respect it is impossible and it would be unwise to try to set up a separate balance sheet for each project on its financial implications outside your country. It may be that there are projects that are really first class, but that themselves do not bring in foreign exchange directly for repayment. But if you take them in the aggregate, if you take your whole country combined, you must be sure that you can pay for the requirements of the scheme, that at a certain period after you have made the investment, you can make the repayments. If you just look at costs and benefit figures say in rupees, when they are invested in a rupee country, then it might well be that after a couple of years, you find it quite difficult to pay it back not in rupees but in dollars, if the loan was coming from a dollar country. When you take a loan in sterling you have to pay back in sterling. So you have to analyse the position of the country as far as is practically possible over a period of years, as you have statistics. You study how are the financial relations between my country as a whole and the outside world.

That is what we call analysing the *balance of payments* of the country. And we will have to see what changes in the balance of payment are made by our project or our programme. If possible we do that for the programme as a whole. But to some respect we also will be wise, as a step in our considerations, to look into the project and what it brings and takes in the form of foreign exchange.

(c) *Differentiation in foreign exchange*

In this study on the balance of payment and its implications and especially after the war with the different currency regulations of governments, of convertibility and of non-convertibility, you might have to set up a special balance sheet for dollars and for sterling and for may be other important currencies for your country. It can be a very important consideration for your new programme for the country, if you can assume that your dollar income is going to increase very considerably in the next 10 or 20 years, to the possibility of buying American equipment and making a dollar loan. So what we are now doing in just having balance of payments without division in different types of foreign currency is a simplification, may be we can see later on in a certain case what the difference will be, in making a dollar loan or making a non-dollar loan. I think that it would be quite possible to analyse a plan and arrive at the conclusion that because there are certain parts that surely will bring more dollars, the plan as a whole may be financed in dollars. Or you may bring a direct relation between that certain element in your total plan with the possibility of making it partly a dollar loan, and a non-dollar loan for another part.

So the analysis of the results of the different parts of the programme is very useful. But I don't believe that that would mean because, a certain factory will give more dollars that you will be wise to buy the machinery for that factory in dollars. May be you buy the machinery for that factory in sterling and use the dollar for electric equipment or telephones which

do not give any foreign exchange but are indispensable and that cannot be bought elsewhere. You would then say the dollar income, from investments which I can buy in sterling will make it possible for me at the same time to equip my telephone system which has to cost me dollars but will not give me dollars.

That is where the project analysis and the plan analysis may come to a clash and the financial leaders and the engineers together who will have to spend your dollars wisely.

(d) Imports for development

Capital income as it comes under this heading in the balance of payments for the major part does not come just in the form of money, a large part of it will come in the form of imports. You have been buying capital equipment in foreign countries against loans made by one institution or the other, or private investors who are going to invest in your country, don't ask payment now for the equipment, and you see it as an import on your balance of trade. You buy capital equipment in the U S A with a loan from the World Bank, the World Bank pays the bill in the U S A and you see the equipment coming, but you don't see the dollars coming and the dollars going out again for payments.

Analysing your imports as to which part of the imports are capital goods and which part of those capital goods has been paid out of your own current income of exports and which part of your imports has been used for consumption goods, which part of your imports has been financed by capital imports is a very interesting, useful and necessary detail of the whole field. And financial institutions, e.g., the State Bank, has to go to into rather deep in this matter in planning and to see in how far and for what reason, some of your imports of capital goods have been financed by foreign investment.

If somebody is importing machinery in your country, then apart from interest that may have to be paid for the loan that has been taken for that machinery, in the long run that machinery has to be written off. If the machinery has come into your country without cash payment, after some time a new machine will have to be bought again in foreign currency, so the depreciation on that machinery has to be reserved in foreign currency. And if it is a private form of investment, then that private firm will want to have the cost of its machine back in its own currency. The real burden on your balance of payments will come at the time when this firm wants this depreciation transferred—

Question—Could not the funds for depreciation remain in the country to buy new equipment in future?

Answer—That might be right, if you have a foreign firm that wants to invest in its enterprise in the country, for a century, but when a foreign firm makes the investment it takes depreciation charges as one of the expenses of its investment during the economic life, technical life or financial life, and it surely would not say that these machines have to be written off and new machines will be coming in without reassurance of transfer and from a private point of view I believe that it is reasonable to do it.

If such investments are made, you find in your trade an increase of capital goods and as I said to analyse your imports as to which proportion is used for long term capital goods may be very revealing, it may show you, in how far you are importing long term capital goods against the long term credit you get from other countries. In the long run, the different charges against that capital import have to come from increased exports; the income from services and other sources are in an underdeveloped country or in a country in a state of development in general much less important, than the income from exports. And the question is whether over a period of years, your development programme provides for enough increase of exports to make those payments possible.

(e) Increasing exports, or decreasing imports

In old times this question hardly arose, because people say in Europe, started with investments in less developed countries largely for the purpose of increasing trade and increasing the production of raw materials. So the increase of exports from the underdeveloped countries was an integral part of their calculations and the condition that this investment would induce increased exports, was rather easily fulfilled. They just did not go into plans and projects which would not promise increased exports, and even in the case of a railroad, which not earns direct foreign exchange, the reasoning was that the railroad was indispensable to bring say wheat from the interior of Argentine to the port, so that without that railroad, other investments would not succeed. So even there they saw a very direct relation between investments and foreign exchange.

Now with the planning and the initiative changing from the financial and commercial centres of the world to the governments of underdeveloped countries this analysing of the situation becomes much more important, because governments of underdeveloped countries are not primarily interested in increasing exports, but in increasing the standards of living and the whole national income. But this does not distract from the fact that in the long run foreign exchange income has to be earned against the capital investments. So we have to analyse this factor much more carefully now, because it is not one of our basic considerations but still one of the basic requirements for success of our programme.

Increasing exports is one way to achieve this, decreasing imports is another way. It may be profitable from a point of view of balance of payments to have a capital investment, which reduces in the long run, the import of consumer goods and thereby makes it possible to have future foreign currency available for the repayment of your loan. If you have in your country the raw cotton and you make a cotton mill, and it becomes unnecessary to import so much textiles, then you have to put up an account and say, if I do spinning and weaving, then I have less exports of raw cotton in future, but less imports of cotton textiles and those cotton textiles are more expensive, there is a difference which I can use for the repayment of the machinery that I have to import.

(f) Secondary imports for development

Now in our considerations we have to come to another point. In your development programme you foresee in some future, real higher income for the people, more wages to be paid out, more income for the farmer. In consuming that new income, they will do that partly by using internal domestic goods, partly by consuming imported goods. Now if you have made any research into the budget of the people that are profiting by your scheme, you may have some idea about the secondary effects of your investment on the consumption in your country.

Some of those studies have been made and I will give you a specific instance of that. In Italy at the present is under negotiation a scheme for land reform and at the same time industrialization. A scheme whereby the owners of the large estates, receive an indemnity for the fact that the land will be divided among farmers. They are induced to invest that indemnity in some big industrial bank and it is at the same time hoped that some of the excess population on the land will go into the new factories that are going to be built. Now there has been a very extensive study about the consuming habits of different parts of the population in Italy, in S Italy and in N Italy. It is different, among people on the land and in the town, it is different among people of a low and a higher income. But by very careful budget research, it has been possible to define rather in detail what will be the effects of the higher national income from this plan on the consumption of imported goods.

And if your development programme is a big programme, then you will find that you will get much more demand for imported goods than before you started your scheme. In fact what you aim at is a higher standard of living of the population and that means more consumption, including more consumption from imported goods and if you do not foresee that, you may very well run into great difficulties a few years after you start. At the moment where your development programme is bringing the fruits, when bringing the higher income, you will see that there are more applications for import licences or if you do not have a system of import licences, there will be just a larger demand and more imports of consumer goods. And if you make your calculations as to the income from your project against interest, spare parts and other raw materials that have to be added to your scheme every year, you may be defeated because the demand from the consumer side increases so much that you cannot at that time supply all the needs.

If the country is rather small and has rather limited industrial resources, then of course these factors come in very greatly, I know from personal experience that the heavy investment programme and development programme in Surinam in the north part of South America has given great difficulties to provide all the consumer goods that were the sequence of the development programme. And therefore you will be saving trouble if you could make some estimate of what the additional imports of consumer goods will be.

In the case of Italy of which I have been speaking in the consideration by the International Bank for the foreign exchange part of this big development scheme the vastness of the scheme and the big influence which it may have, because it shifts a great number of people from the land, where the percentage of consumption goods is much lower, than the percentage consumed by people of the same standard of living in towns, played a large role. In consequence, the International Bank is willing to finance not only the direct capital equipment, like farm machinery or machinery for the new industries that are going to be set up, but also for the next 10 years, the foreign exchange that will be involved in consumer goods that are a complement of this whole development scheme.

Now I believe in your countries, few or no studies have been made, about the proportion of the use of imported goods, by different groups of the population. In Indonesia, but that was long ago, in 1936-37, a detailed statistical study has been made. A great difference in the use of the income of the people on the land and in the towns, for domestic and imported goods was found. Imported products ranged from about 2% on the land to about 20% in the towns. So the shift of population from the land to the towns, which may be one of the results of your development scheme may in itself create a higher demand for imported goods. It therefore is advisable to make some allowance for this item.

Higher development of your population and of national income will induce people partly to buy directly more foreign consumer goods, and it will at the same time increase the demand for the industrial products and the agricultural products from your own countries. So here again you have to make an allowance that modifies your calculations about the earning of foreign currency. If you get a higher industrial development and more of your food is consumed you can expect a higher production without capital investment from abroad. There you easily get an equilibrium, but with industry that is far less probable. If the textile industry in Indonesia is induced to grow by agricultural expansion plans, those textiles will at least be produced by additional labour and in that respect there will be a very happy development. But it means that that more raw cotton will have to be imported for the future consumer needs.

Now by lack of data on that you surely cannot go into detail calculations of the net results in one sense or another. But as planners in your government you ought to be aware of the fact that inevitably a smaller or a larger part of secondary imports, directly or indirectly by inducement of your domestic industries to grow by the larger demand that is to be expected, has to come about. Not as a warning that your development scheme will not be a sound scheme because this is what you may expect in any rapid development. But in order to know before hand that this is going to happen and if you are getting money from abroad, if you make a loan application to an international institution like the World Bank or other financial institutions, it is a good thing you show in your amortization plan that your total development programme has made an allowance for this additional demand for foreign goods. If you do not do it, then people who are going to investigate your programme will surely tell you that you have been over-

optimistic. Although you can't give a definite figure, but only a very rough estimate, it will show that you have seen this inevitable implication of your development programme

(g) Secondary exports from development

There is of course another side to the same problem. If you create new industries, it may be that these in turn will induce other investments and savings and some of them may result in goods that can be exported. That may take time but the development may make it possible. I will give you again an instance with which I am a bit familiar. In Indonesia settlement schemes for transmigration of people from Java into Sumatra, were carried out. The scheme itself provided for equipment, for cement and steel and machinery and may be a road had to be laid out and you may well calculate the foreign exchange that will be necessary for that area and you may aim at increasing rice fields and that rice may come into your calculations as a factor against your total expenses. In an importing country like Indonesia, you may put it as saving of foreign exchange.

But the fact that you are settling large groups of farmers, may bring new opportunities for expansion. Within 5 or 10 years they may find out new crops on which you have not counted. They may open up new coffee or pepper gardens and export those products and if your development scheme is sound, you will always have left some openings for the own initiative and inventiveness of the people that you are settling there. And there may be a very happy surprise to see that the people have found out something. You cannot put that into your calculations, but such secondary exports may be very well developed, if you make the spring board for it.

TIMING IN FINANCIAL PLANNING

The next point of great interest is the spread over time, the expenses and the income in foreign exchange do surely come with a lapse of time and you have to show the successive stages. Not only the capital investment in your plans which you may have got as a loan, but also the additional expenses for which your loan may or may not make an allowance.

If you buy agricultural machinery, you have to include an allowance for buying the gasoline and the oil. And it may be that in future over a period of time your imports go down and your income goes up. I must admit that so far in very few or almost none of the loan applications for the World Bank, a concrete estimate over a longer period of years has been made. If you would be able to show how in time your expenses and your income will change, then you are again one step ahead in the presentation of your planning and the impact of your development programme.

In every development programme there is a period where you have to put in expenses and you still do not have the results. The International Bank when giving loans is aware of this fact and one of the allowances that is made by the Bank is that if a loan is made, for the first 3, 4 or 5 years no amortization on that loan is asked for. The only payment that is asked

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for is interest, but no amortization. So this shift of the burden into later years is a practical allowance for the fact, that you cannot expect your income directly after you have received the loan.

In the costs and benefits programme, as Dr. Lund has put it out for you in the Thal Project, he has taken a 10 year period and has calculated what will be the net result after 10 years with specifying what happens in between. Foreign exchange balances you must be more careful. You cannot so easily as in the case of your domestic finances neglect the possibility that before these ten years are over, you will run into acute difficulty. Foreign exchange regulations and scarcity of certain currencies are so common all over the world, all the governments and all the State Banks in the world are so carefully looking at the figures about reserves in foreign exchange, that you cannot say well if only after 10 years I find that on the whole my programme has been a profitable programme. I therefore am safe to go ahead with it. And therefore if the programme would be complete, we would like to set up a balance sheet of income and expenditure in domestic currency and in foreign exchange over a period of say 10 years. It is very valuable if you can put this in a table, some where in your project, viz —

Domestic Expenditure	Currency	Year				Category
		1	2	3	10	
Buying of land	Local	100	50	etc.	to	
Domestic materials	"	20	50	"	"	
Wages	"	40	80	"	"	
Other expenses	"	10	15	"	"	
Sub-Total	Local	170	195			
Machinery (specify) bought.	\$		30	120	etc.	
" "	£	20		50	"	
Lubricants	£			20	"	
Fuel, etc.	\$		10		"	
	\$		40	120		
Sub-Total	£	20	..	70		
	Local	170	195			
Total cost during first period	\$		40	120		
	£	20		70		
Total costs expressed in local Currency.	

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In the same way you can compute a table of expectations, sometimes both in foreign exchange and domestic income, but there of course income starts in a later stage, may be in the sixth year

In most cases the breakdown of different sources of income is less complicated than in expenditure and a statement of prospective income may be less elaborate

PROJECT AND PLAN FINANCING

You need not to have in all of your projects, a favourable foreign exchange balance I want to see that emphatically; I said it yesterday, but I want to repeat that It may well be that one or more of your projects, if you analyse it in this way, does give you a deficit all the way along You will have to justify the inclusion of such a project by the importance which it has to sustain other parts of your plan or to sustain an increase in national income and the standard of living of certain groups of the population. Provided in the overall picture you can pay for that, it would be unwise to abandon a good project that in foreign exchange would not be profitable There is nothing like a profit ratio, such as you might calculate in your costs and benefits ratio There is nothing in this world which will say that if you invest 100 of foreign exchange over a period of years, you ought to get back 120 or 140 in foreign exchange If you have covered the demands for foreign exchange and if you can manage to do that in the long run and in the sequence of your plan, then you have done all you need to justify your programme as a whole from the point of view of balance of payments.

Talking about the balance of payment influence of one single project is beyond the reality. It is necessary to review the financing of a whole plan, taken for the country as a whole and the alternatives, how it would be without and with your development plan as a whole. You have to see them integrated The basic reason for this is, that there is no tag on the money that you pay and the exchange that you get from foreign countries It is in the form of undefined money and capital transfer and all your expenses add up, irrespective of source of income and expense It is just a money figure and in your balance of payments it will count as one figure And therefore an analysis of the situation has to be made for your country as a whole.

The lending agencies also are well aware, that if they finance the three projects with highest priority, which you in any case would put into operation, they in fact make it possible for you to finance projects 4, 5 and 6, which are lower on the list of priorities This is one of the reasons why the International Bank in general finances future purchases and no reimbursement on projects in operation, even if the project itself is excellent in all aspects Project financing in fact mostly is plan financing.

FINANCIAL PROJECT PLANNING

Case . Import of agricultural machinery for different purposes

I want to discuss with you the case, of the use of agricultural machinery. What that will in different suppositions the influence on the balance of trade and balance of payments. If I import agricultural machinery, then I have first of all an import of capital and if I have an amortization scheme for whether my loan of 10 years say on an annuity* basis then I import for 100 rupees or a 100 lacs, I have to put for the next ten years as an expenditure on my balance of payments 12% each year. But the import of this machinery has a secondary effect on my imports, it does not stop there and I have to see that also. You have I believe in the costs and balances scheme given by Dr. Lund 10% import of spare parts every year, which have to be imported. A second aspect is oil and lubricant which may have to be imported. I have found an indication that it may be 10 to 20% of your capital purchases.

Well it means that over a period of 10 years, certain expenses come into your balance sheet as the consequences of that loan for farm machinery. If you include interest it may be 35 or 40% of the principal.

In the foreign exchange income, that may be derived from this investment of new agricultural machinery, there is a very great difference as to the purpose for which you are going to use it. And I would like to show you the great difference under two assumptions. One would be if you use this for reclamation of land that is not now used and that only can come into rapid cultivation if you import this machinery. And the other assumption is if you have land already in use and now cultivated with bullocks and you replace them with tractors.

Let me take the first case first. You plan on the lines given by Dr. Lund and Dr. Ezekiel and you have found that it would be impossible to reclaim that land in the rate of development which you like to have without the use of that heavy machinery. So the first thing to do is to see 'What can I achieve with the speeding up of my reclamation'. I could do it in a short period with tractors and I could do it in a longer period with bullocks. Now in the case of the Thal project, speeding up with tractors means that you will get more profit from your investment in canals and in roads. Then your tractor programme acts as an additional key programme, complementary to the other capital investments, will get an extra value because you avoid losses on capital investment that you have already to pay. If you reclaim certain areas in the jungle or bushland where no big investments already have been done, but you just have to clear the soil and make it useful for agriculture, you have to see, how many years you

*The annuity means that you have a fixed amount every year available for amortization and interest. We make it more concrete by saying that 40% will be interest and 10% will be amortization. But the average interest on a 4% interest basis that goes down to a very low figure in the last year will be 2% and the annuity will be 12.

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gain if you do it in this mechanized way. Let me assume that you can speed it up with 4 years. In that case you may count as income from this reclamation programme the difference between the two methods. And for our foreign exchange review we then may calculate which part of that income can be exported or if it is a food importing country, how much imports have become unnecessary because that food became available earlier. It may well be that 60% of your additional income means extra exports or savings of imports and even if you have to continue to use the tractors for another year or so because you cannot change all at once from tractor reclamation into bullock ploughing, there is every chance that the net result from a balance of payments view is very favourable. This is shown in table IV.

TABLE IV

FOREIGN EXCHANGE COSTS AND BENEFITS OF MECHANICAL LAND RECLAMATION. INFLUENCE OF SPEEDING UP BY MECHANIZATION

Year	Interest and Amortization	Service	Total expenses in foreign exchange	More Export or less Import	Net cost (—) or saving (+)
1	1	10	11		—11
2	4	10	14		—14
3	4	6	10	24	+14
4	4	6	10	48	+34
5	4	6	10	42	+22
6	4	6	10	30	+20
7	4	6	10	18	+8
8	4	6	10	6	—4
9	3	6	9	6	—3
10		6	6	6	.
Total	32	68	100	180	+80

FINANCIAL ASPECTS

STATEMENT OF CROP INCREASE

Year	1	2	3	4	5	6	7	8	9	10
If mechanical reclamation	.	.	40	80	90	90	90	90	90	90
If bullock power Increase	.		40	80	70	50	30	10	10	10
Sold to foreign markets or saved on imports			24	48	52	30	18	6	6	6

I used in this table imaginary figures, they would have to be adjusted according to circumstances, whether if you go into a reclamation scheme of land with mechanical equipment. I took a 10 year period as I assumed that after those 10 years, the land will be fully in cultivation.

If you could put your equipment after 5 or 6 years into another area and use that for a new reclamation, that would be better from a balance of payments view than the use of this machinery during ten years, provided that you can manage to have after 6 years all the necessary bullocks available and the farmers ready to use them. It is very largely a matter of organization of how to use your equipment in the best way. If you could do that in two shifts, five years each so that if you can use your machinery for 10 years, and you can divide it over two distinct areas then your total gain in balance of payments would be very much greater. As to a question, why the increase in production does go down to only 10 in the later years, I should answer, that I do not believe that in the long run there will be a large difference in the production in many of the conditions of your countries, with either mechanical or bullock cultivation. So in the financing scheme you have to take that into account and use the real benefits of the mechanical reclamation, the fact that you are speeding up a development. Well in this case, the balance of payments analysis shows that you are very well justified to do it.

Let me now look at the case of displacing human and animal power for gasoline power and agricultural machinery, then our reasoning basically is the same, but the result may be very much different. Because here you must not only see whether the use of this agricultural machinery, as an isolated case, is profitable. But also we have to study what we save, if we do not take bullocks, but replace them by tractors. Do you expect 10, 20 or 30% more income from that land? If the figures of Table IV would apply, and the foreign exchange costs of tractors are 10, then you must produce $10 \times \frac{100}{60} = 16$, more to cover these expenses, e.g., 21% of the yield with bullocks? What do you save if you do not have to feed those bullocks?

Now in most countries in this area, few parts of the farm are set aside especially for fodder for draft animals. But if you grow fodder where other crops could be grown, you might increase exports or save imports.

In a country like the U S A. that is a very important factor. Since 1918 untill now, about 30 years, by the introduction of tractors, they saved 15 million horses and about 6 million mules. Now those 21 million animals that have been replaced by the tractors, would occupy for their fodder a very considerable area of land. You may almost explain the whole export of wheat from the U S A from the factor that many million acres of land are not now used for fodder for draft animals. So if that would be the case, then you have a very great saving. If you do not have that, it may still be profitable from a private point of view to buy such tractors and you may save labour as well by doing that. But from a foreign exchange point of view, it may well be that you do not cover the expenses for amortization and interest and spare parts and gasoline that you have to import.

As a general rule we may say that there is a great difference between the use of resources, that are uptill now in your country not used such as the natural resources of the land or the raw materials that are available or labour that most probably is in surplus as against substituting resources that are used now. Substitution in itself may be a very desirable thing from a technical point of view or from a private economic point of view, and such substitution is mostly mechanization, but that mechanization may well be such less profitable for the balance of payments of the country than harnessing new resources and new labour, new land and raw materials that uptill now lay wasted.

PRIORITIES UNDER FINANCIAL ASPECTS

The subjects, we dealt with in former lectures enable us to set up a number of qualifications for a project, if you have to finance that wholly or partially with foreign capital. These qualifications not always run in the same direction, they may clash. A certain project may be suitable for foreign financing from one point of view, but it may be very unsuitable from another point of view. Things are just this way, that some of the things you want to do, clash with certain requirements of the means you have to use for that.

(a) *Relation between capital and additional exchange and national income*

As a general rule we may apply what we found yesterday, that you will have to aim at a very good relation between the capital you invest especially the foreign capital and the addition to national income that you can achieve by that new project. You may specify this with the addition, that it is advisable to have also a good ratio in scarce foreign exchange. That will give you scope for other projects equally desirable, but without direct income in foreign exchange.

(b) *Short gestation period*

In this respect Dr Singer has told you that if you are in an early stage of development, try to find projects which would give you quick results, it may be smaller projects, but they may be the best ones for your country. Now this general rule has a specific application in foreign finance. It is a very good thing if it does not take a long time to get that added national income and foreign exchange income. You have in every project a certain period before your optimum result is reached. That period may be one year or it may be 5 years, or it may be longer. You cannot avoid that—after you have imported your tractors, the crops that are to be grown on that soil are just not yet harvested. If you make a railway line or a mine then it takes much longer, before you get the optimum result of your project. Now this period in the beginning where you do not get an increased national income, already most probably you have to pay the interest. There are certain types of loans where in the first two or three years, you pay less interest and in many cases you do not pay an amortization on that loan, but you already have expenses following from that loan. So the second rule is that it is good to give priority to projects which give an added national income in a short term after you have bought the foreign equipment or after you have made the foreign loan.

(c) *Labour intensive industries*

You have seen in Table II and III about the formation of national income, that there are three elements which are very important in the determination of that added value—

- (i) What is the productive income to your citizens from that new production,
- (ii) What raw materials do you have to use for that production, and in those raw materials again you can distinguish between domestically produced raw materials and imported raw material, and
- (iii) What is the depreciation on the capital that is used for that project

Now in so far as it is foreign loan, then the loan charges, interest and depreciation, have to be deducted from your national income. At the same time raw materials that have to be imported for that purpose have to be deducted. Now in this respect we can distinguish industries along these lines. Some are what you call 'labour intensive' and some are what you call 'capital intensive'. Certain industries give a large addition of value to the raw material that is used in that industry and others only gave a slight increase in value to the raw material and therefore in proportion do not add so much to your national income. I refer again to Table III and there you find figures for the Netherlands and in some cases like in agriculture that is an exception because they use there a very large amount for imported fodder and fertilizers, much more than in other countries. At the head of this is banking, which almost exclusively uses labour in the country and only the very little capital in the building, and expenses in paper and pencils

what they use, have to be deducted. So banking gives 88% of its production as added national income. In transport it is 72—in tobacco it is also 72—in agriculture 70. But in your country agriculture is higher than 70—public facilities 62—textiles 47—metal industry 44—shipping 40, paper industry—32 chemical industry—32. You see that there is an enormous difference between different types of industry and an industry where you have to use so much raw material and capital and the added value for your country is low, you must not put in first priority for your development projects. But those that have a high percentage, should come first.

(d) Small depreciation needed

Now there is another criterion that I have mentioned to you 'the capital intensity' especially when you use foreign capital. Now there are very few statistics available about the relation of capital intensity to your added value from production. But as one of the indications I took again from the same Netherlands National Budget figures—the amount of depreciation, that was used in the calculations in the Netherlands. Here you have two factors. You may use a large capital but if that is usable over a very long period, that has to be depreciated every year only for a small part and that does not count so much. You have other industries that have smaller capital but that capital is used up in a short period and then the wear and tear of your capital is larger and that counts more and you have to deduct that from your national income. Now you find again how these figures are very greatly different. The tobacco industry (the Netherlands has a lot of cigar making) uses only a small amount of capital, depreciation there is only 1% of the total domestic production—in food processing it is 2%—in the building industry it is 2%—in the chemical industry it is 3%—the textile industry has 4%. Now I come to the heavy industries. First of all printing—the graphic industry has 10%, in mining it is 10%, in transport it is 13%, in shipping 14%, in public facilities—27%. So you see the range of what the use of capital in your industry takes from your national income, differs between 1% and 27%. In agriculture in the Netherlands it is 7%, somewhere in between. But you see how important it is to know intimately the nature of the enterprises that you are going to establish.

(e) Use of domestic raw materials

In raw materials, you have the distinction between domestically produced raw materials and imported raw materials and here it is very clear that as a general rule the use of domestic raw materials will promise you much more added national income than the use of imported raw materials. In Table III, you find again the figures for the Netherlands, but these ratio figures are not characteristic to certain branches of industry; they are characteristic for certain countries. Each country has its own raw materials and the conditions are very specific for each region.

(f) Goods and services that cannot be imported

Another rule is that you have to give priority to the production of a number of goods and services which cannot be imported. You have to take into consideration, that in many instances you have the choice to replace certain imports or to increase certain exports or to produce such goods and services, that cannot be exported nor can be imported. And a number of goods and services in the last category are of vital importance for your country. And as you cannot import them they are only available if the government or private enterprise in your country takes care of it. Under this category come especially transportation and power. For instance railways services, you cannot import that as a finished product. If you want them, the only possibility is to produce them in your own country. Textiles or cigarettes or machinery could be imported, but these products cannot be imported and power in general cannot be imported. You might import coal, but in general it is impossible to import hydro electric power. It would be possible that neighbour countries set up joint power stations and in Europe now-a-days they are working on a great transmission line of power, all over Western Europe, but in such case you need an international programme for the whole region, and we go beyond a national development programme.

As to possible imports of coal, that can be done, but the proportion of coal going into the international market is infinitely small as compared to the total production of coal. It is too large in volume and too small in value to stand a long transport. Although it might be that you can import coal, power is one of the thing for which in general import is let me say 'very difficult'. So they come in the category where you don't have the choice of postponing a development and in the meantime importing the commodity. You may do that for steel, or textiles or other goods that flow into the international market. But here your choice is producing it now and doing without for the time being.

(g) Use of untapped resources

You have to give priority to those projects, where you put in action resources which in your territory uptil now remained untapped and I give again some instances. In the Chittagong hills are a lot of bamboo forests which are not used at the moment. When you put up a paper mill, then at this time the raw material for the paper mill is not yet there. But the production of the raw material will spread the influence of the paper mill in the large area where they go to cut and transport bamboo. And all the expenses on the raw materials that are going to be produced for that paper mill are an increase of your national income. There is a difference in the increase of national income by the new production of this raw material and let me say a jute mill where also you are using domestic raw material, but where otherwise you could have exported that raw material. So you have to deduct from the income of your jute mill, the loss of the export of the raw jute. In the case of the bamboos, which are not yet produced at the moment you have not such a deduction to make.

Another case is the use of clay for ceramics. That clay is there and no body uses it. So if you use that in the making of Chinaware or earthen ware you have the added value in the production of the Chinaware but also the production and the transport of the clay.

The third instance of this type which is very common in your countries is that you have unused land and labour. On the land you have a lot of unused labour resources—underemployment, or over population or hidden unemployment as the different terms are used, but they mean that the labour on your land, now is used only partially—if you could expand your agricultural area, if land can be reclaimed that is now water-logged or under jungle or under bush and not used, you can put to work-part of this idle labour. Then there is no replacement of productive resources into your new enterprise, but just the use of resources that are not being used. Now there might well be a clash between one or two of your criteria, it might be that using those unused resources, might ask for a large capital, and although it is very important to harness and put in use unused resources, it might be that it just costs too much. There always are large categories of unused resources left for future generations. The point is to make the right choice at the right time.

(h) *Use of by-products*

This is a case which more or less comes in the same category, but I want to deal with it separately, viz., the use of by-products, which otherwise would be lost. You often have a certain industry that is not profitable enough because the by-products cannot be used and if you now put up a new industry especially for those by-products—then you have not only the chance that this new industry will prove to make a good profit—but it may well be that at the same time another industry, which has at this time to throw away the by-product becomes more profitable. Such a case perhaps is molasses which the sugar factory cannot use now or may be using only in a certain way as a fertilizer of the soil. May be putting that into industrial alcohol is a good project. But may be again it does not pay to transform those by products into other useful products because the capital investment would be too large. These criteria all stand on their own feet and they may very well clash.

(i) *Removal of bottlenecks*

A thing for which I believe you must be on the look out very carefully, I would call the removal of bottlenecks. If you can find out in your economy the bottleneck of further development in the direct industrial field—you are almost sure that there you will find the greatest addition to national income from your investment. The explanation why the removal of bottlenecks is so enormously important in any development programme comes from a basic rule in the general economy. If two products together can serve a very useful purpose, but the component parts separately have very little value like a key and a lock, the value of the addition is equal to the

value of the combination. That rule is applicable in the case of the removal of bottlenecks. It may be that with rather small investment you can relieve bottlenecks which make possible the development in new fields of industry. It may be a railroad, which opens up a valley in the interior where a large new production in agriculture or in mining or in other industry becomes possible after you put up that railroad. In our time of road-transport, you may have an alternative of putting in a railroad or putting in a highway and transport by trucks over that highway, but the provision of transportation to a certain isolated area, may come in the category of removal of a bottle neck.

Another instance has been mentioned by Dr. Chellappah. If you embark upon a large work somewhere in a jungle, that is malaria infested, there your investments in the fight of malaria is the relief of such a bottle neck. And although you might say that this malaria-control itself does not produce a large national income, as relief of a bottleneck for new production in a certain area, it may be just the thing that you have to do. So this criteria of the removal of bottlenecks makes it necessary not only to consider an isolated project, the profit it would give in itself or whether the railroad from the freight which it will earn you is a profitable thing, but especially to see whether that railroad opens up a country or whether that health project will make a certain area habitable and increase production in maybe 5 or 10 other industries.

Foreign capital investment for tele-communication comes in sometimes under this category. It may well be that if you consider the profit and cost of a telephone system that telephone system is not paying in foreign exchange. But as the relief of a bottleneck for the development of an enormous number of enterprises, for people who can become customers of that telephone and thereby can expand their business, because their risk is much lower by better telephone service—that may well make your tele-communication investment a very profitable one. This is an expansion of the general rule that any investment that you make, will spread its influence over larger parts of the country. We call that in general the multiplier calculation, in the case of removal of bottlenecks we might say that the multiplier is, extraordinarily great.

Now as I have said these nine criteria do not always go together, they may well be conflicting and there the wisdom of the man who makes the plan and of the Government who carries them out or promotes private enterprise in certain branches or gives subsidization to certain parts of industry that have to be developed, has to find its way, between these criteria.

(j) Summary—Prevalence of economic criteria in foreign investment

Now may be these criteria will hold in many cases regardless of the fact whether you have domestic investment or whether you have to make a loan from abroad. I should say especially in the second case, you should test your project against these rules more carefully, because in the case of domestic investment, as Dr. Singer has pointed out to you—you are in a position—by your future taxation policy and subsidization policy to achieve a certain social aim, which establishes a priority against these economic rules. But

if you make a loan in a foreign country or you have foreign investment, you cannot put the burden of diversion into social aims on the foreign investor, if you have to pay interest and amortization. In the case of private investment, you cannot discriminate against him and tax him more heavily than your domestic investor. Any measure of discrimination is very detrimental to your process of economic development, because that will make every further capital investment much more expensive. If the country would get the name that possibly foreign investors are going to be taxed more heavily than domestic investment then private capital will become shy to enter the country and even international investment will become shy. A country which loses part of the confidence, will have to pay for that in the form of more expensive new capital. So to apply these rules to foreign capital is still more important than for your domestic capital. And, therefore, it is wise to invest especially in those lines which apply to the rule and I repeat once more, it may well be that a health project or an education project or a tele communications project or a social project like housing will come in the category of the removal of bottlenecks and, therefore, it is the best investment you can make. You cannot measure it at the financial merits of the project as a separate unit and their value may be greatly enhanced by a consideration of the effects on the whole of your country.

LIMITATIONS IN FINANCIAL PLANS

You will have noticed in the newspapers this morning that the Co-operative Plan for Economic Development of Commonwealth countries has been presented to the Parliaments of Pakistan and of India yesterday. I have a copy of this plan with me and I hope to present this to you next week. There are a number of particular features in this plan which very well fit in with our discussions on the financing of economic development. You will get an opportunity to see more about the details and the plans for financing of those commonwealth development schemes.

(a) Capital requirements increase with development

The relation between the amount of capital and capital goods necessary for the national production and national income differs greatly from nation to nation with the stage of development. The higher the development, the higher also is the capital of the whole economy and the highly development countries have to divert a much higher percentage of production into capital goods to sustain their economy than a country in a lower stage of economic development. You can very well see that if you look into the business of a farmer who is about at the subsistence level, who owns barely any capital goods, all he needs are seeds for the next season, and a very small amount of additional capital goods. When you have a railway or a mine or you have a foundry — there it takes an enormous amount of capital goods every year to sustain your production.

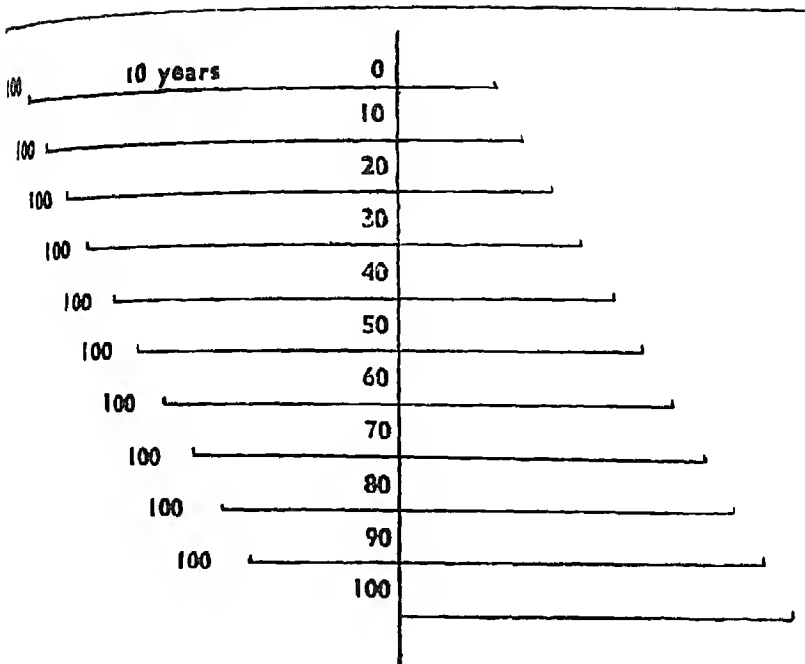
When a country comes into a higher stage of economic development, a larger diversification of its economy, it has to go further and further into capital intensive types of agriculture and industry. And this is one of the factors which adds to the difficulty of economic development without outside resource introduced in the initial stages. A country with a small diversification, what you call on a lower stage of industrial development, has little savings, partly because business needs traditionally from its production only a small proportion, to sustain the level of production that you have in the country — and partly because the income is so low that you can not afford to set it aside. But whenever higher economic development is started, you have to start projects which have a rather high capital intensity and to start from a low capital intensity to a higher capital intensity, means that you must have the capital goods. If you do not have them from your own national income you will have to try to find it from outside resources.

The possibility of a country to invest in new developments is dependent upon conditions. If the country is rich and it has enough domestic savings and it has enough income in foreign exchange, it can easily just divert those savings into investments and buy raw materials and the capital goods for its development abroad, and it has no problem in making a loan or importing capital. But in this case also the limit to which a development programme can go without danger of inflation is the amount to which those investments can be made from domestic savings. Even here, there is the danger of trying to invest too rapidly with the possibility of inflation. But in underdeveloped countries which want to accelerate their development largely, the danger of inflation is greater and you will remember how Dr. Singer has spent a considerable time with you on the dangers of inflation and how inflation is defeating a development programme in the long run.

(b) Cumulative effect of foreign loans

Regarding the stimulating effect that foreign capital can have on your economy, we have to consider a few very important problems. The first one is in what form and on what condition does that capital reach you. It may well be that the conditions would be so heavy, that the capital would demand such a heavy payment for coming, that it is not worthwhile to introduce it in your economic system. After repayments have been made there should be enough benefits to the economy of your country. If they cannot be shown it is better to do without that investment. And here the rate of interest and the period of amortization that is asked and that you can agree upon is very important. Now when you make one loan of Rs 100 or 100 lacs or 100 crores, then it may well be able to pay the amortization and the interest, but if you consider this procedure going on for a long time and with a number of instalments as a process that goes on over a long period, the structure becomes more clear. Then you will see that each of these instalments of loans that you get, will ask for its own payment of interest and of amortization and now you get at last an equilibrium, dependent on the time of amortization.

FINANCIAL ASPECTS



A loan is made every year of 100, at an amortization rate of 10 years.

At the end of the 10th year (beginning of the eleventh year), in total 550 is still outstanding. If C is the instalment and N is the number of years of amortization (at the end of each year), then an equilibrium is reached after N years, and the maximum loan outstanding is.

$$\frac{N+1}{2} \times C$$

If you are borrowing on a 25 year amortization basis, then you get 13 times your additional capital import. So if a country would get a loan of 1 billion dollars a year on a 25 year period and every year would get that amount, then after 25 years, it would have accrued to 13 billion, but after 50 years or a century, if you go on every year, investing a new one billion dollars, still your total capital available on outstanding loans would remain 13 billion dollars. You have in the equilibrium period to pay for interest the rate of interest multiplied with the capital you will have in that stage. Now if that stage is reached you will see on your balance of payments, 100 capital import, say a new loan made on a 3% interest rate, but on the other side of your balance of payment you find the repayments on 10 instalments of 10 or 100 to pay back. So you see that there is no net capital movement, the country is saturated. But you find that in this case, with a 3% loan, the country has to pay yearly $5\frac{1}{2} \times 3 = 16\frac{1}{2}$ interest. By this method of raising loans, you come to a certain maximum that you really can get from outside. Of course you can go to a higher maximum if during the period your yearly amounts are increasing. But that would mean that you would have to find an increasing amount of foreign capital for your economic development.

(c) Capability of repayment

Now let us see what is the position of the country after you have reached that status of equilibrium. You see that you are only better off after that 10 year period, if in the meantime, you have invested that foreign capital in such a way that it will be easy for you to pay 16½% interest. If this is invested in government enterprise, or irrigation work or a local forest reservation or development of port or railways, you will have to see how far the income from those projects, will make it possible to make the required payments of interest. That would go on till the time you say that I do not need any more foreign capital and all your loans will have been paid back.

If we consider the case of a public work carried out by or on behalf of the government, this repayment comes on your budget and will be considered after some time as a tax. If you have made a wise investment, the productive income will have sufficiently improved. Whether or not it is a heavy burden to your people to pay back the interest on the loans that have in the meantime been accruing, depends largely on the organization of your country and especially on the taxation structure of the country. The responsibility for the repayment of this type of loans will fall on the government and the government will find it from collecting new taxes or increased railway rates or import duties or in charges for electricity or some other means of recovering the money, but it has to come from the national income. Now there is a very interesting ratio. There is a ratio between the total government income for different services that the government is rendering for defence, for social service and for economic services in the field of railway transportation, power and so on. That ratio of total government income to national income is in India and Pakistan according to the Colombo plan 7—8%. In the U.S. it is about 25%. In the U.K. where the government is giving a large amount of services it is still higher. If you add to your national economy a new part made possible by the new investment, people living under those conditions, as in the case of the Thal area, will have in the long run in general the same way of living and the same amount of general services from their government. In the first few years, they are prepared to pay extra taxes but after a period of time they will claim that they cannot pay more than other people in the Punjab. Or say it the other way around, a reasonable payment to the government for all the services including national defence and security and water and so on, which they are prepared to pay to their government will depend largely upon the general structure of government taxation. This holds still more for the secondary national income, to be derived from the project. And, therefore, the ratio between the percentage of national income that can be expected to be paid to the government, is a very important factor whether the additional burden of the foreign capital will be heavy or not heavy, whether it can be borne or not by the nation. Now if your taxation percentage is 7% that means that the additional national income has to be 14 times as much as the charges on the investment. If you take 100 capital at 3% interest, then you will want in your equilibrium

have to have 42% as an additional national income from all sources direct and indirect, primary and secondary benefits of your project. A minimum of 42% of the 100 capital investment should be an addition to your yearly national income. In a calculation about the Thal area I took 3% as an interest basis and found 43% of the capital as the yearly addition to national income from primary or secondary services. So you see under this calculation the Thal development project would be just profitable. I made a calculation a long way by taking all the taxation and the land revenues and all the expenses and there I so found that the government will receive more profit in the Thal development. But this relation of 42 and 43% shows you how that would work and you see on the other hand if you have to pay 5% interest rate and you would take 7% as taxation, then you would have to increase your income with 14 multiplied with 5 or 7% of your capital. There are only a few investments especially in public investments that would be able to bear 5%. If you have to pay only 2% then of course it would be much easier.

In the same way, if your economy is developing as you expect that it may develop in a period of 25 years, then you might also consider that the services which the government is rendering as a whole to the national economy will in the long run make it possible to have a heavier taxation. If you have to set up certain schemes which are of an economic or partly social character, one of the decisive factors will be the organizational structure of your society and your government, which makes it possible for the new people or for the new enterprise, or for the people in the new region, or for the people in the new factory, to pay a certain part of their new income to the government. The higher the overall rate of taxation, the further you can go along with capital investment into projects of a more social than economic nature. If you do not take this into account, then you will see that after you have been calculating that it is quite possible on an irrigation project to pay say 20% of their crop for water rates, people will come and say that there is discrimination made between them and other people. They have to produce products for markets, fruits, wheat or sugar, in competition with the farms of other parts of your country, which have not been benefited by this scheme, but which do not pay such a high water rate.

(d) *Net increase in national assets*

The next point of importance has been mentioned yesterday by Dr. Sam. After you have made these repayments, then the country, if the investment has been a wise investment, still will enjoy the use of a number of long life capital goods. And if you make provisions for the period of amortization of the loan you should have it in such a way that you still have a capital available, though not at the original value in which it started. A railway may get worn out in spite of your maintenance, but your irrigation works may be better off, unless they are ruined by water logging. In this way you can build up a free national capital asset and if you go on with depreciation charges on your projects, after the period of repayment of the

foreign loan, then the benefits accruing from that project become national capital and you can use that for further investment. In the Colombo plan we will see that rather large parts of the proposed financing of the development of India will be from the depreciation charges of the railways. The railways have been there a long time and the loans made for it have been paid back or at least they do not count any more in the calculations and now the amortization and depreciation on the railway capital are free national capital which may be used for further economic production. It is of very great importance that you see that the economic life of your project exceeds the period you have agreed for amortization of your loan. It would be unwise to say 'Let us try to raise a loan on a 50 or 100 years' basis, because we are building an irrigation project that will last for 50 or 100 years.' You would then have an easy task to raise the amortization on your loan but you would not be building up, at the same time, a part of your own national capital. The possibility of increasing your own national capital assets in the long run is dependent on these two factors, first of all whether you have invested it in a plan that will give even after a very long period still additional income to the agency that is administering it and secondly whether you have such a good maintenance of these works and you can charge that good maintenance against the income of every year, that the economic life of your investment has increased. Especially the maintenance of these works is of vital importance and that is not only a question of money but also of ability, technical and economic skill and organizational skill. And in the case of an irrigation work, all the agronomic and hydraulic research is very important. They will determine very largely whether in the long run, foreign investments really are to the benefit of your country or whether it is just pump priming of a machine which in the long run is not going to work on its own energy. There are great possibilities that in the long run, such investments increase greatly, national assets or national income. If, however, they are used unwisely, then you will see that at the end, you will have to pay for that, and it may be a burden on the national budget.

(e) Case of investment in private enterprise

I wanted to say a few words on one other point 'What would be the case if you invested in private enterprise instead of in government public works?' Well if you would put up an industry with capital, in the way that we have set out this morning, then surely that interest will be considered by the industry as a part of the cost of production and whether it can pay that will depend on the competitive position with all the establishments that are already existing in the country. Private enterprise has no possibility to tax the public, like a government could do, if their calculations do not come true. In the case of a loan from the International Bank for private business, the government will have to guarantee such loans and it might be that the government in consequence of the guarantee would have to tax the public if the loan is not a success. However, there is the possibility to subsidize that industry and very often that is done by a protective duty. Now we have to see clearly that if you support an industry, which is part of your development programme and is financed in this way, you are taxing the public, taxing the

people with an amount equal to the output in your industry multiplied with the price increase, as a result of the protective duty. Now as Dr Singer would say, a subsidy may be good or may be bad, may be you will want to tax your population heavily to make it possible to create a new industry. But it may have very bad effects on the choice of development projects

Essentially it prevents the investment of this money, in the way of savings or other forms of taxation, in other branches of industry, which are more useful. You will have to consider, for what period you want to give that subsidy. If there are other branches of industry in your country, which could be expanded without a special protection, you may distort the optimum pattern of your development and at the same time of world trade by your taxation or subsidisation system. For this reason, the Havana Charter has given specific rules for these practices, which are rather common, but they are taken without a clear justification on economic grounds.

RELATION BETWEEN DOMESTIC AND FOREIGN PARTS IN PLAN

In order to give you more details about the financial optimum, I start with a very simple formula

$$P = F + D \dots \dots \dots (1)$$

That means your programme consists of two parts, foreign exchange and domestic resources and the programme cannot be executed unless you have taken care of both terms of the equation and you have to see what you need in your development programme from both sides. Now again if the country has a favourable balance of payments, it will be possible to divert part of its normal foreign exchange income into a new development programme. It also may come from assets that have accrued in preceding years. Mostly under developed countries, except in a period of very high prices for primary products, do not have a favourable balance of payments, at least not so favourable that they can finance the F in our equation, out of the present resources.

Therefore the question arises how far you can stress your programme on the basis of foreign resources to the amount of our F in the formula above. We assume that you cannot get more and you just would not have the raw materials and the capital goods for a larger programme. That would be a limitation and a number of countries assume that that is the only limitation to their programme. But before we speak about other limitations, we like to speak about the optimum. If we start from a small development programme and the government wants to go faster, in the calculations you will find an optimum, if the F in our formula is in equilibrium with the D, the domestic resources that are available for development. And if you get from abroad, the net foreign exchange and capital to be combined with the maximum of domestic resources that you can raise, then you have your optimum development programme.

(a) *Primary and secondary needs for imports*

Let us see how this formula works. What is the relation between F and P. There are in every development programme two different parts which

have to be financed by foreign exchange. One part is almost first of all calculated in every development programme, viz., the capital goods directly to be imported for the programme. The second part of foreign exchange, is the need for import of consumer goods and in some instances the raw materials that are needed for the domestic production as a part of the development programme. A major part of these imports will be consumer goods for the labourers that are put to work in the programme. You will therefore, find that foreign exchange is included invisibly in every programme. And if you do not take care in your development programme of these import needs, then you will surely create inflationary pressure and may be inflation, because your new development programme will demand the use of those goods and services that up till now are used for your smaller domestic production and your normal consumption. If the new demand for foreign goods cannot be satisfied from your own resources, because you have made already an effective use of the present foreign exchange resources and therefore, there is no provision in your market for the new demand, prices go up and wages go up and then you are in inflation.

Now the incidence on import of domestic production and of payment of wages is largely different in different countries. If the country is very much underdeveloped and only has a limited number of raw materials for the world market, the proportion of imported goods in the budget of even the labour class is large. If the country is not self-sufficient in food, that may be a reason why you have a large incidence on import of every domestic requisite. If the country is small and has only a limited number of resources there again the incidence on import likely is larger than in a big country. You have a small percentage of incidence on import of your domestic production if the country is self-sufficient in food, if it is a great country with many diversified activities in different parts of the country and if the country is already more or less industrialized. So it is very important to see to the structure of your country—what would be the incidence of a large development programme on my consumption of consumer goods—you will see from the figures that I am going to give for the countries in the Colombo Commonwealth Plan, how important it is to calculate this.

(b) Ratio between plan and foreign resources

Now before giving you these figures I can show you a rather easy formula for this calculation. And I assume in the absence of real budget figures for different groups of your population, that the additional domestic production and the additional wages to be paid in your development programme will have the average consumption pattern of your country. I assume that the people who work there live in the same way as the other people in the country, unless there is a specific reason, why the standard of living and the way of living of people under this development programme would be largely different from the normal pattern from living in that country. You may take the incidence on import of new domestic production equal to the proportion of imports to your national income at present. The rough figures that we get through this analysis, I believe would be reason-

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is enough to start with. Now in the relation between the F and the P , in the equation, first of all you have to import the direct cost of capital goods in your programme and I call that import index $I-1$ multiplied with P . As to the part of your programme to be financed in the second place, we have the incidence on import of the remainder of the programme—that is import index $2, I_2$ multiplied with P minus $P \times I_1$. The part which constitutes direct capital goods, is already taken care of and therefore your index I_2 will fit only on the remainder of your programme. Now if you work out this formula, then you will find

$$F = P(I_1 + I_2 - I_1 I_2) \quad (2)$$

Now let me give you the figures for I_1 and I_2 for the Colombo Commonwealth plan.

In the Colombo plan figures are given about the development programme for the next 6 years for India, Pakistan, Ceylon, Malaya and Borneo. I have taken these two together because N Borneo is rather small and it is easier to have these four countries

Country	Primary import incidence of plan	General secondary incidence on imports	Total needs for imports in plan	Foreign exchange requested
India	18	10	26	44
Pakistan	40	10	46	46
Ceylon	38	34	59	59
Malaya/N Borneo	18	56	65	57

From these figures, you see that the theoretical possibilities that you may have a country with a programme largely consisting of foreign capital goods or a small percentage—both are present in these four countries. India and Malaya are proposing to import a small portion of foreign capital goods directly for the programme. Pakistan and Ceylon are proposing to import a large proportion. You have at the same time in these four countries, countries which are self-supporting in food or are already largely industrialized and large economic units—Pakistan and India are in that class. There the incidence on import of their domestic production as a whole is only 10%. The smaller countries that are not self-sufficient in food and have less industry and not so diversified resources are Ceylon and Malaya. There you see that the incidence of wages and internal domestic production on imports is much larger. So we have combination of a low I_1 and a low I_2 and a high index in both directions and high and low also in both combinations.

So as a result of this calculation of the foreign exchange components of the total development programme of the countries, you see that it differs from about one quarter in the case of India, so two-third in the case of Malaya, although the primary imports are both 18%. You see that the strain

on the national economy and the inflationary pressure of the development programme would not be so great in the case of India and Pakistan, if you would only try to obtain from abroad only the 18 or the 40%. But in the case of Malaya where the low percentage of 18 is a great deal the result of a big housing scheme, if only 18% would come from abroad you will get an enormous effect of inflation because all the labourers that will be used in the housing problem, will consume about 50% in imported articles. Not to take into account the secondary incidence on import of domestic production in the case of a country in the position of Malaya would be disastrous. In the case of India and of Pakistan, similarly, it would not be so serious.

It might be of interest to show you how these countries calculated for themselves the foreign exchange they suppose they will need in their development programme for the next 6 years and these figures are given in the Colombo plan. I gave you in the table a comparison of the figures that are asked for in the Colombo plan and the F that we founded in our calculations. I would like to discuss these figures with you after I have given you more details about the Colombo plan, but here you see that at least Pakistan and Ceylon have precisely asked in the plan the figures that they would need accordingly to our calculation. In Malaya it is somewhat less and India has asked for considerably more. The fact that Malaya is asking less than our calculations indicate, proves that they are confident that with the high prices of rubber and tin part of their development programme can be financed from their exportable products.

(c) Adaptation of national programme

What will happen in a country with a large development programme that cannot raise enough foreign exchange. If you are unable to raise the necessary foreign exchange for your development programme by private investment or by a government loan, then you may try to divert part of your normal consumptive expenses into your development programme, because that will give you foreign exchange for your programme. But if you do that you must be very careful, because it may cause inflation, as the people in your nation outside of your programme will have to manage with a smaller amount of imported goods and when prices and wages go up, they also will go up for your own programme. In that case there is nothing to do but to throttle down your programme in accordance with the available foreign exchange. You may do it partly by foreign exchange control and thereby denying your people the use of certain luxury goods, but you cannot go too far in that direction without creating inflation.

(d) Case of incentive goods

I might give you an instance where even in very simple production methods it is felt very much. In Indonesia after the war and in other countries in this area too, the Government tried to rehabilitate production of copra of rubber and other products. Here you might say that there was no need of foreign exchange for that production. You just have to pick the

coconut, dry it and export it, no foreign exchange is required. But the peasant and the labourer on the land, just would not go to work without textile as a vital part of their consumption programme. This had to be fulfilled as the main incentive and in international discussion the incentives for family production areas have played an important role. During the war, the same problem was very important in Africa. It was more or less a revelation for economists and statesmen of higher developed countries who wanted these foodstuffs and raw materials to see, how dependent so-called subsistence farmers are on imported commodities. You can't have a large production without a large supply of consumer goods in such regions and the lack of it was a bottleneck for the production of rubber and copra and other products.

(e) Disequilibrium between domestic and foreign resources

What will happen if you can get from abroad a loan for the necessary development but your domestic component, the D, is too small, you have not domestic resources enough. If you do not have them there is one way that is to create money and to pay your labour in domestic currency and thereby hope that you can fulfil your development programme. But here again you will create inflation, the materials, domestic resources really available for your development programme are not there to be bought with the increasing money in circulation. So by trying to disguise this by money creation is again inflation and will be cheating your labourers, because you give them money and that money is not worth what it looks like. At the same time you are draining the other part of your economy, because there also the money that the people have will lose part of its value.

Now what will happen if relatively you have too much foreign exchange. In this case you could not use that for productive goods, you cannot use that for the consumption part of your new development programme because the plan is made in accordance with your domestic resources. If by chance you get more foreign exchange than you can absorb in your various programmes with your domestic resources, then you will probably import more consumer goods. You have no need for more capital goods, they already are all in full use and harnessed together with your domestic savings. The import of more consumer goods may have a beneficial effect on the price level. If you can afford to import more foodstuffs, more textiles and more articles for the bazaar, then the price will go down and that may be beneficial for your price level and your consumers, but it may have also a bad effect, because a surplus supply of consumer goods in your markets will induce rich people to more consumption and if the people have the possibility for more consumption, their savings will go down. They may use their hoarded money or money in their bank account and then you have the possibility that the domestic resources, that you have thought would be available in the next year are not there, because they are consumed on foreign consumer goods. And then again you come in the position that your domestic resources will fall short of your needs. Or the higher consumer goods that are imported will compete with your domestic industry and it may decrease the production in your present domestic industry. So to suppress an acute situation of food shortage or of shortage of textiles and other consumer goods

it may be good to give some injection of imported goods to your economic life in general, but it may be that this will upset your savings programme and your investment programme and the development of industry in your programme. Then there is the second point, unless you get those extra consumer goods as a grant-in-aid, in future you will have to pay back amortization and interest on a loan that has not been productive in the direct sense and that may have had a good effect or many have had a bad effect. But at least you can say that the result of that type of investment in consumer goods is unpredictable in its results.

Now what happens if relatively in your programme you have too much domestic resources. You may say that is a very theoretical theory, that you will always have not enough domestic resources available. Well if you have more domestic resources available according to the development programme, first of all you will come to the conclusion that you will be able to enlarge your development programme, that you can do more, that you have not been ambitious enough in your plan. Secondly, by taking in your banks or your government, for the time being, those savings, for the first period in your development programme you will decrease effective demand in your country and you will get a deflationary effect and it may be wise for a country, to create such a temporary deflationary effect. And in the third place, if your money is convertible, then you will automatically use part of your domestic resources available to pay for yourself more of the important needs for your development programme. If your money is not convertible, then you cannot use the third method. So you may have enough domestic savings available in your country, involuntary saving like taxation also or export duty on export products, and you cannot use them immediately for an enlarged development programme or you may enlarge your development programme.

(f) Programme as function of domestic resources

The relation which we have discovered yesterday about the impact of a development programme on the need for foreign resources, at the same time gives us the optimum development possible from domestic savings and domestic investments. If we know what percentage the F in our formula is from the total programme, we can express P in terms of D easily.

In a programme of 100, we take an increasing percentage of F

F = 25	D = 75	P = 1,33 D
F = 33	D = 67	P = 1,50 D
F = 40	D = 60	P = 1,67 D
F = 50	D = 50	P = 2,00 D
F = 60	D = 40	P = 2,50 D
F = 67	D = 33	P = 3,00 D

(g) Foreign resources help stretch domestic resources

These simple relations applied to the countries of the Colombo Plan led to the following data. We found yesterday for the four Commonwealth countries of South East Asia, the following F India 26, Pakistan 46, Ceylon 59 and Malaya 65. So the relation of the programme to domestic saving $\frac{F}{Pm} \% \text{ of } D$ for India is 135, for Pakistan 185, for Ceylon 250 and for Malaya 278. Now this result may seem astonishing. The fact that Ceylon and Malaya which use a large portion of their development programme for imported goods enables them to finance a development programme that is much larger than their domestic savings, as compared with India and Pakistan, where the figure of domestic resources in the total programme is so much larger. In a development programme where you need little or no foreign exchange for the execution of the programme is your programme more or less limited to what you can bring together from domestic resources, unless you borrow money from abroad against your domestic expenditure.

(h) Case of almost exclusively foreign finance

In case on the other hand the programme needs more or less 100% of foreign exchange for its execution, then there is no connection between the amount of domestic savings and the volume of programme that you can execute. If on a small rock phosphate island in the Indian Ocean you have to import there the labour and the food for labour and the equipment to make a harbour and a mine then there is no relation whatsoever with the domestic savings in that island and the volume of the enterprises you can put up there. These circumstances exist at Christmas island or Nauru and a similar condition exists on the small island Bintan near Singapore in Indonesia, where the whole island consists of bauxite, nothing grows on that island and everything has to be imported. If you put up an oil company that takes oil from the soil in the desert or in the jungle, you have to import not only the capital equipment for that enterprise, but also the labour and the food and everything that is required by the labourers. That are so to say economic islands and they exist in different places. The volume of that kind of enterprise has very little relation with your national economy, as far as expenditure is concerned, if you take a few necessary precautions. In a case like this it looks the right procedure is to let it be done by foreign capital, but you should at the same time, ask that foreign capital to provide from its own resources, not only the direct capital equipment for their enterprise, but all the expenses they have. If you allow them to draw on your national foreign exchange income for the goods which they have to buy for their labourers, it is possible that at least in the first period they drain the foreign exchange resources of your country and stand in the way of other projects which might be carried out in your country. But if you ask such enterprise to provide fully the foreign exchange needed for almost all their expenditure then in the long run, from a foreign exchange point of view, you can only have a benefit. Even after a large transfer of dividends and depreciation and all the expenses which they may have, if that enterprise

is not a failure, a surplus in foreign exchange will accrue and that part will come into your national foreign exchange income. Here is a clear case where business enterprise which might in future contribute largely to your foreign exchange income and to your national income by the increased labour possibility, will create a drain in the early stages in your national economy. This depends largely on the contract with the firm that asks for a concession. You should see that you have the beneficial effect of the enterprise for your country without having in the period of gestation (in the period where capital is not yet bringing income) a drain on your foreign exchange.

(1) Costs and benefits in foreign exchange

So in a country like Malaya or Ceylon, it is possible to finance between two and three times the domestic savings and that is only beneficial to the country. Here again I shall say that there is a limitation and another criteria has to be applied. If you have a development programme like that of India, where the foreign exchange is very low, in your calculations the addition to national income that will accrue from your project is the most important factor. You have heard Dr. Sain, when he explained the Damodar Valley that in his appraisal of that project, he stressed the relation between expenditure and the addition to national income. That is justified if you need not consider the balance of payments in making that plan. The impact on your balance of payments will be very small, if you have only the low percentage of foreign exchange incurred that India now proposes to carry out.

In a programme like Ceylon or Malaya, where such a large portion of the programme involves foreign currency, there the national income is not enough. You have to see what the profit of the programme will be realised in foreign currency as well. So there you have to select projects which will promise you a future foreign exchange income and here may well be a difference of opinion as to which project is the best for the country. The programme of Ceylon and of Malaya are not justified only by the fact that they have enough domestic savings and that national income and government revenues will benefit. In such a case you have to concentrate on what you might call an economic project and cannot concentrate too much on social projects which in general do not provide so much foreign exchange, although they may provide a considerable increase in national currency.

OTHER LIMITATIONS

Sometimes you cannot enlarge your programme because there are other bottlenecks that cannot be lifted by the availability of domestic or foreign resources. There are material and human resources which you need and which may be available only in limited quantities. These are a bottleneck more serious than the financial limitations, if they have a combination of two aspects at the same time, viz., *not importable and not substitutable*. In this case more financial resources will not help. Now what are the goods and the services that are not importable and at the same time not substitutable?

able. They constitute real economic and physical bottlenecks to your development programme and you see that some plans are solving the issue by trying to raise them domestically or just going around the problem by saying "this project that you have started is impossible".

Non importables—You cannot substitute by other means of production agricultural land, and you cannot import it—the only thing you can substitute for it is the import of foodstuffs. Other important items in this category are transport services, you have to develop them, but you cannot import them, and you cannot substitute transport services with other services. The creation of new transportation services takes time and before you have done that, that will be a bottleneck of limitation on your development programme in other directions. Hydro-electric power is more or less in the same way not importable and not easily substitutable by other services.

One other category which is very important as a limitation is 'skilled labour', you cannot import skilled labour, and you cannot substitute skilled labour by unskilled labour. Technicians and managers for your industry, engineers and scientists—well you can partly import them under a technical assistance programme. But that is a new invention more or less—the possibility of the import of certain technical skill and management. But they are not substitutable and you cannot create them in a short time. These limitations may be more valid than the limitations on the financial side. Now if you cannot evade them in a certain development programme, you will just have to make a frontal attack on the limitations and some part of your development programme has to be devoted to the elimination of factors that limit your programme.

V Seasonal Factors in Agricultural Financing

I would like to speak to you this morning about seasonal influence on agriculture, agricultural planning and financing in S. E. Asia and that is of particular interest because agriculture plays such an important part in the economy of the countries of S. E. Asia. Most of all, I would like to give you an indication of the methods that can be followed in agricultural planning.

The fact that agriculture is so seasonal in character makes any figures about the yearly yield or yearly income and other figures on a yearly basis for me personally about worthless, because we want to know how these data are divided over the year.

(a) Rainfall

When we start with a systematic approach to the problem of the development of agriculture in a certain region, in most areas the first thing to be studied is rainfall. The seasonal distribution of rainfall in S. E. Asia is much more than temperature, a limiting factor in quite a number of agricultural enterprises.

(b) *Water-supply*

Then, secondly, in most places agriculture is dependent on either artificial or natural increase or decrease in the water-supply on the land or on permanent irrigation. So we want to know how is the irrigation water divided over the year and we draw a chart how the water-supply that is available from irrigation or otherwise for a certain plot of land changes with the season. It is very important whether you are mostly dependent on rain or on natural flooding or whether you have irrigation water from canals (like in the Punjab) or a tube-well programme. Tube-wells have a more or less evenly divided flow of water all over the year, because it is much more economic to pump and use the water all the year round.

In Table A, I give you the figures from a study made in Java. It gives the water coming into the reservoir over the year, with the majority of the water coming in between December 1 and May 1. In this period, rainfall, in general, is sufficient to fill the rivers and canals. After May 1, however, a suppletion from the reservoir is needed to enable double cropping in this area. Very little water is flowing into the reservoir between June 15 and November 1. The maximum content of the reservoir would be the needed suppletion during the period of May 15 till October 1, viz., about 3.5 billion m³, and that is the capacity envisaged in the plan.

**CHART OF WATER AVAILABLE AND NEEDED IN STORAGE RESERVOIR
TJITARUM-OROJECT, WEST JAVA**

TABLE A

(Unit millions m³)

		Available	Needed over rainfall	Shortage	Surplus
October	I	100	10	.	90
	II	100	80		20
November	I	180	120	.	60
	II	180	270	90	
December	I	310	120	.	190
	II	320	100		220
January	I	330	70	.	260
	II	350	70	.	280

contd.

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TABLE A—concd.

	Available	Needed over rainfall	Shortage	Surplus
February I	450	50		400
February II	450	50		400
March I	450	90		360
March II	450	30		420
April I	400	10		390
April II	400	10		390
May I	250	120		130
May II	190	300	110	
June I	150	450	300	
June II	110	500	390	
July I	70	600	530	
July II	50	550	500	
August I	40	600	560	
August II	40	650	610	
September I	25	400	375	
September II	25	160	125	
Total	5,420	5,420	3,620	3,620

(c) Grouping scheme

Related with the supply of water is the crop rotation, and the next sequence of what we have to study is the rotation as it exists before we establish our agricultural plan and after we put in a better irrigation or a reservoir or tube-wells or any other measure to make agriculture more efficient in a particular region. In the case of a reservoir, the cropping programme is interrelated with the supply of water. In cases of irrigation without a reservoir, crop rotation is dependent on the water-supply. I need not explain this, because most of you are irrigation engineers or agronomists. But I should say that in many instances there has been a lack of co-operation between the engineer and the agronomist as to the use of water. It is not enough for an irrigation engineer to know that he provides during a whole season so many acres feet or cusec or other units of

water : he has also to know what is the optimum division of the water over the year. The success of tube-wells may depend largely on an effective use of the water all the year round and a seasonal crop, that is asking for a lot of water during a short time, could not be grown on a large acreage with tube-well irrigation, because you would have to put the capacity of your tube-well at much too high a level to be profitable

(d) *Labour scheme*

The next point is the effect of the crop rotation on the work done by animals, by men, by women. In some cases, the work of men and women is substitutable but in other cases there are strong natural habits of the people so that certain work is done exclusively by men or exclusively by women. So there you surely should have to study both the amount of work to be done by men, women and draught animals in the cultivation and other work for agriculture. Next Table (B) is an imaginary table about the use of animals and human labour in a village (see page 361)

It is apparent, how little the yearly total reveals. Experience in Indonesia, where a large number of observations have been made in the field with different crops and under different conditions of irrigation and rainfall, has shown that you need to follow, by very careful and detailed observation, the conditions over a number of years (one year is not enough, because the seasonal aspect is so closely related with freakish weather conditions). You have to take at least two years average and even monthly figures are not enough. You have to study the use of animals for cultivation and of human labour at least in half monthly figures. If you do that, certain peak periods in the use of animals and of men and women labour on the field will be shown.

Now you must examine closely these peak periods and as a principle in this study in the field I should say not to take for granted what you find about scientific agriculture in your text books. Conditions are sometimes very much different in places very close. It may be that in the great plains of the Punjab, you have similar conditions over a large area, but in Indonesia where you have large and small valleys and slopes of mountains, conditions are different in nearby places. And I doubt very much whether even in the Punjab or in Thailand conditions in peasant agriculture are similar to those that were found at an agricultural experiment station. In many cases, the observations under artificial conditions of an experiment are absolutely useless for the work in the field and you should have as the basis for your agricultural planning and for your irrigation planning for the supply of water to the field, a large number of detailed field observations. You can integrate them with your theoretical knowledge of certain dates where a crop has to be planted and the number of hours needed for ploughing and harrowing and sowing and reaping, but without knowing the reality in the field you must end up with bad planning. Some 50 years ago, between 1900 and 1910, in Indonesia scientists started to study these figures at the experiment station, but later on, between 1920 and 1930, the agricultural

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service decided to put in a large number of field observations and these became the basis of future planning.

		Animal (20)	Men (100)	Women (100)
October	I .		450	
	II .	40	900	750
November	I ..	140	1,200	900
	II .	200	720	300
December	I .	160	600	.
	II .	40	480	..
January	I .		150	600
	II .		300	.
February	I .	80	450	750
	II .	40	300	..
March	I .		750	
	II .	40	900	1,700
April	I .		300	1,800
	II .	40	450	1,200
May	I .		1,050	450
	II .	200	600	300
June	I .	280	1,050	450
	II .	160	450	600
July	I .	80	150	300
	II .	20	750	150
August	I .	60	600	.
	II ..	80	450	.
September	I .		150	
	II .		150	
Total .		1,680	13,350	10,250
Number of days per unit ..		83	134	103

Conditions in different parts of the country, of course, vary with the crops grown. Sometimes you have the available labour as the limiting factor in cultivation, and I myself have studied the case where in a dry region there was a double cropping of rice and tobacco in the same field and during the dry hot season, tobacco only covered a part of the area. I found that the number of tobacco plants grown by certain families depended much

more on the size of the family than it depended on the size of the land owned by the family, because under those conditions the tobacco had to be watered nearly every day and sometimes early in the morning and late in the evening. Therefore, there was a close relation between a unit of manpower and the number of tobacco plants grown. Three thousand tobacco plants were the optimum for a man, and a man, of course, with a very small plot of land might have less than 3,000 but very few could handle more than 3,000. There it was not the water or the land, but the availability of manpower that limited the area of the crop.

Some crops in Indonesia, e.g., coffee and pepper, where the harvest has to be done in a short time take so much labour that seasonal labour from outside the region has to be drawn in. And in any calculation about money income and credit, you have to see that under these conditions instead of getting money, harvest time is a time of spending money.

In other cases you have permanently hired labour on the farm. In Indonesia, in quite a number of rubber growing regions it is customary for the larger holders to have permanently or semi-permanently hired labour, which is paid with 50 % of the product that is harvested.

In the case of copra, you have another system. In most regions the copra is harvested four times in the year and many of the owners of the coconut gardens do not like to climb those high trees but some people are especially accustomed to climb and harvest trees all the time. So there a group of people make a contract for harvesting and preparing the copra from the coconut. In regions with small coconut gardens, the farmer himself climbs the trees, but for larger gardens it is customary to have paid labour.

(e) Income and expenditure

You have, of course, to take into account the consequences of the ups and downs in the supply and the use of labour, before you can decide on the expenditure and income of money. There again, local habits play a very large role. It is not enough to say that a farmer uses so many days of labour in the year and the daily wage is one rupee or a rupee and a half. You have to see whether labour in the village is paid completely in money or whether people in the village are helping each other and need only to give a small amount of money, plus a meal as is customary in Indonesia and what the money outlay for that would be.

In many cases you will find ingenious ways to economise on the use of money. This is a very wise policy which you cannot interchange by the best credit system. It is of very little use to urge people to pay in money and make a loan even at a very decent interest rate, if the work can be done efficiently by other means. But if some people go in for a crop that is not used by everybody and do pioneering work, there the system of the mutual help fails. That only works where everybody in the village has the same seasonal trouble and a similar division of work over the year. You cannot ask your neighbour to help you on the farm on the supposition that

or five months later, you will help him on his farm. You can do it very well if he needs you after two or three weeks, but not after a longer period. With a diversification of agriculture, with new crops planted by few people, the system of mutual help fails and other many wages have to be paid to hire farm hands.

The money income in many cases coincides largely with the period of the harvest but sometimes you find that there is a custom to store the product a certain time and to sell it later. In many other cases, unfortunately much more common, the traders, the merchants, and the middlemen come in before the harvest and a large part of the harvest is sold beforehand.

That, of course, is a thing that has to be studied and I should say not only to be studied by the people who are responsible for marketing or for the co-operative movement, but even by the agronomists, and it should be known in a general sense even by the irrigation engineers. It may be possible by some changes in water-supply and in crop rotation to alleviate the bad situation. By double cropping, you greatly diminish the urge to sell the crop beforehand, because the bridging of the gap of income between the period and the other becomes much more easy.

In the study that has been done in a number of cases in Indonesia one can see exactly how much people in the villages pay and get in money all the year round. You will often see very strange phenomena in the money transactions of farmers, but you should make detailed budget studies of farmers. It seems very difficult to do that, but with reliable staff people who are trained, you can make a study as has been made in Central Java for a period of three years of all the farmers of a certain region, asking them day by day, what they have worked, where they have paid, what they have eaten, their food, all the year round.

(f) *Food consumption*

The food intake also has its seasonal fluctuation. In some places people have much to eat during a period of the year and very little to eat during another period, and before you can embark on a development scheme in such regions, first of all it is necessary to plan to alleviate the bad food situation during certain periods of the year. So you should study the seasonal food intake of the farming population. Dieticians and chemists have to co-operate and analyse the food situation with the agronomist.

(g) *Storage of food*

In some cases, statistics have been made about the food stored by farmers. In 1920, there was a time in Java when the government feared a shortage of food (just after World War I) and a law was made that statistics be turned to the government every month about the quantity of food stored in the village. Mostly these statistics had no value at all. But I happened to come to a village where the secretary of the village and his father and grandfather for 60 years have kept all the statistics of the village and they

had such a pile of them that they had bought a separate house to store these statistics. These people were really born statisticians. There I found reliable figures about the amount of food stored in farmers' houses in that year. And I could make very nice statistics about the habits of the people in storing food. I found that far from the city, the farmers all stored food, but near the city, very few people stored food for the whole year. They sold more and bought more in periods when their own store was exhausted.

(h) *Need for Farm Credit*

In any statistical study about credit that the farmers would need you require a very detailed study, under the specific conditions, of the rural bank or the co-operative societies that have to work there. What are the periods when the people get the money and could that period be changed if crop rotation conditions were changed? Would people use better and cheaper credits or would they continue to be financed in the manner in which they do it now? Do the people themselves consider the conditions of credit given by merchants is a very risk matter. We all speak a lot about the big profits that are made by traders. I have here a book from the U.S.A. by Mr. Murray on agricultural finance and he tells there that in Ohio in a good year on credit given out by merchants, 25% interest was charged to the farmer. But that 25% interest represented 15% losses on such loans by the traders and only 10% was payment of labour *plus* interest on the money. So the apparent necessity to give credit money at certain times may be non-existent because the farmers themselves consider the sale of the product as very risky and even if they lose a rather large percentage by sale before harvest, they still are very glad to have sold it and have been relieved of the risk. In that case, it may even be bad for the farmer to take away from the possibility of merchant credit.

There are a number of cases where the risk is rather large. I studied for myself the case of Mango orchards where the rule is that they are sold when they are nearly ripe. Well, one storm may destroy 50% of the whole crop. In certain years the merchants make a large profit, in other years they sustain a large loss. The farmers are not so unwise. They prefer to sell their mango crop at a time when they get a decent price, but not the actual market price, because if they leave the fruit on the trees without selling it, during harvesting season they may get surpluses. There may be a temporary glut in the market and at that time the merchants just sell to the towns those products that they have bought beforehand, and there is no demand for the mangoes from those orchards where the people have not sold their fruit but reserved their whole crop till the fruit was ripe. It may very well be that the man who does not take up the merchant credit is the man who is unwise — you have to study that.

(i) *Financing the crop*

At the same time when merchants and middlemen give credit to the farmers, those merchants and middlemen have to be financed. You cannot

expect that they keep a stock of money in their house or even in the bank large enough for the trade in that agricultural product. And again here is a field for study — another field where assumptions or just going ahead with what we believe to know by tradition does not work. The way in which traders are financed varies with different products and in different regions. The studies that have been made in this field in Indonesia by the people's bank and the government and by the pawn shops are very revealing. In a study for the pawn shops, it was found that some of the traders bring in jewellery during the period that they need capital for their trade.

Sometimes financing is done through the commercial banks and the exporters and the financial relations between merchants and people who have establishments to process in first instance agricultural products are very interesting. It is a field that has been studied far too little in most countries. I have seen very few studies published on this subject. But it is a vital point in the whole financial situation of your rural areas and you should know it — you should study it. It may, of course, take a long time and painstaking efforts to do it. But if you are planning without knowing who finances the rice mills and the cotton ginning, the jute dealer and the rubber trader and the merchants in other big agricultural commodities, you are just like a blindfold man who tries to reach his target — he may be very lucky or very unlucky, but you should *know* before taking large scale measures of government financing.

(j) Effect of price stabilization schemes on financing

One side step a particular thing happens when a government steps in with a price stabilization scheme. If prices are not stabilized or controlled by government, financing is mostly in the hands of exporters and traders. The moment when a government comes in with a single seller or a price stabilization scheme, there is no use for the merchants and the middlemen who financed agriculture to follow that course because they are sure that sometime the crop will be available at a given price. In 1930, most of the sugar crop of Java — it was very big then, 3 million tons — was financed by Indian exporters, for a large part by money coming in from India. When in 1933 the government established a price stabilization scheme, the burden of financing came on the producers. What was the benefit for the Indian sugar importers to finance the Java sugar crop? They knew that the crop would be there at a stable price and that they could buy or not buy at that price. So every inducement for financing was gone.

In 1937, the Indonesian government started a capoc stabilization scheme. That crop was used to be financed from New York and on the day the scheme was created, that credit stopped completely and for a month or so the whole trade in capoc and the establishments where the pods were cleared (like ginning cotton) were disorganized and the government had to step in and finance the capoc crop.

With the establishment of the Jute Board in E. Bengal the necessity arose for the government and the Jute Board to finance a large part of the jute crop and similarly in every agricultural price stabilization scheme, a

rather large burden of financing comes to the producer. In the U S A, of course, the same rule applies, and there the government had to finance through the Commodity Credit Corporation, which took over I believe billion dollars of the financing burden of wheat and cotton and other agricultural products. So government help to farmers to stabilize the price is at the same time a very large burden on the shoulders of the government and the producers.

(k) Credit to Rural Banks

The next point is the seasonal position of co-operative and rural banks. In certain regions in Indonesia where I have studied it, the maximum amount of money which the people in certain seasons borrowed from the rural banks was 3 to 5 times as high as the minimum. In other places the ratio was only 1 to 1½. Where you have very strong seasonal influences the financing of the co-operative societies becomes a real problem. It may well be that you have to devise quite different methods of financing of your provincial or central co-operative societies, if all the regions come under the same seasonal influence. It may be that they can help each other if the season is different in different parts of the country. It may well be that cotton and jute financing come in the same period, but if they come in different periods, the Punjab and East Bengal could finance each other's crops. That has to be studied. You cannot take anything of these data as just given data. You must never take any of these figures on their face value. Without careful study, I can assure you that you are up against very heavy trouble and I believe that a lot of the good efforts of governments and of co-operative and marketing departments in this field have failed partly because the basic study of the seasonal aspect of the region was not done intimately enough. People have some general ideas about it but it is not enough to base your financing system merely on that.

(l) Financing export trade

It seems far outside the field of agriculture, but the seasonal financing position of the exporter of a certain agricultural commodity is very important and the whole trade may be frustrated and the price which the farmer gets may be very low if the financing of the exporter is not assured. That is a very important point because you must always understand that every hitch in the long chain of financing from the farm into the ship, if it is an export commodity, comes back with an extra percentage on the shoulder of the farmer. He in the end takes all the risk, because in the long run all the partakers in that whole chain find it possible to shift the burden to the lowest party down in the field of production and, therefore, the farmers in the long run are always the people who pay.

(m) Influence on industry

There are other seasonal aspects in your economy. In Indonesia, a study has been made about the implications of seasonal agriculture on the sale of certain industrial products. In certain (batik) textiles, between December to April, only four million metres are sold monthly, but between

June to September, 12 to 14 million metres—3 to 4 times as much as in the off season and the whole batik industry has a very strong seasonal character also. The sale of cigarettes on the land is during those same periods double as high as during the bad season. So there were in Indonesia just before the war 96 cigarette factories with 24,000 regular workers, but during the main season of sales, when there was money in the country, may be an equal number or more of farmers were included to make cigarettes by a special system assigned for this purpose (abot system). Indonesians like to have their cigarettes fresh, and after six weeks they are stale—they cannot be sold anymore. So it is impossible to prepare a stock of those cigarettes and sell them in the period when everybody wants them. They have to be produced at the same time, and there is a very interesting inter-reaction between the use of farm labour and farm money and cottage industry.

(n) *Small coins in circulation*

Another study that has been made in Indonesia is the influence of the money circulating flowing in and out of the villages, and that has been done by taking into account the types of coin that are taken in and given out by the government cashes, the places where the government changes banknotes into small coins and *vice versa*. In some places where there are a lot of tea estates, small coin is always flowing in the village, which comes back through the traders and the merchants and the import houses in towns. In other places, there is a very strong seasonal flow and from the difference in that seasonal flow of the small silver and copper coins in certain places, it has been possible for me to show earlier than from the reports of the agricultural service, the occurrence of good and bad harvests. A very nice yardstick for the financing position of a certain region is whether the amount of small coins used in the village goes up or down. Any large bringing in of coppers into the government cash in a certain place inevitably meant crop failure. What I called the iron stock of small coins in the village rotation of money was used for payments outside the village. And that was a very bad sign about the crop conditions in that certain area.

(o) *Taxation policy*

There are other fields of activity—taxation for instance, land revenue intake by the government has to be adjusted to the seasonal influences.

(p) *Marriage and birth rate*

Of course, you have in villages seasonal influences on marriages, and I could even find a nice correlation between the seasonal influence of agriculture and the seasonal birth rate in certain regions. On rather short distances, the seasonal figures for marriage and birth rate differed, and so you see how far the rainfall and the water and the use of labour and money in the village has its influence.

There is no fixed pattern, you cannot say in my country it is this or that in my province it is this or that. Large number of detailed studies have been made and I believe that the pile of studies on these subjects which have been put together in Indonesia between 1920 and 1940 shows that everybody could start this kind of study and try to see how all these different wheels

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of agriculture and the use of money and credit in agriculture work nicely. You will be thrilled by the revelations that you get. And you will see how many things you thought that you knew, you really did not know, and how many things you discover when you make these studies.

VI International Financing Facilities

PRIVATE FINANCING

I would like to tell this morning something more about international financing facilities, first of all something about the history of world financing and development. That started really about a century ago by shipping lines and railway investments in the U S. A., which at that time was an underdeveloped country, Latin America and Asia, Russia and later on also in Africa. It was done at that time almost exclusively on a private basis, even through private public utility companies and partly by loans floated by governments. Russia has been one of the governments that has made loans in foreign countries, especially in France and in England and in other European countries, for very large amounts.

World War I has given the first blow to this system of international financing. As a result of that war, a number of the countries did not pay or could not pay and France has lost billions of gold francs in Russia and in Austria and in other countries. And, secondly, World War I has made it possible for the U S. to pay off the debts it had in Europe and from a debtor country become a creditor country.

World War I has not so much interfered with private investments in Asia and in Latin America, but World War II has done that. As a result of World War II, by the expenses which were made for war, the U. K. and other European countries have been forced to sell most of their investments in Latin America and a large part of investments in the U S. that had remained, and the war has destroyed quite a lot of the material assets of those investments in Asia. Take, for example, the large investments in agricultural estates in Indonesia by destruction during the war and later on by inflation a large part of that investment is lost.

And after World War II the flow of private international investment has come almost to an absolute standstill. I have here some figures about the years 1945—48, inclusive.

INTERNATIONAL FUNDS INVESTED IN UNDERDEVELOPED COUNTRIES 1945—48 (AS FAR AS ALLOCATED TO FIELDS OF ACTIVITY)*

(Million U. S. dollars)

Field of activity	Total	Public Funds	Private Capital
Agriculture	278	278	—13
Processing for agriculture	20	33	—63
Communications, transport power	416	470	
Manufacturing and mining	1,041	530	+502
Total	1,755	1,320	+426

*Methods of financing economic development in underdeveloped countries United Nations, Lake Success, 1949, pages 68-69.

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The only large item in private capital is about U. S. \$500 million in oil companies. That means that in the other fields there has been a return of investment of about U. S. \$76 million by sale of the investment. Here, I believe are not included the material losses by war destruction, but they must be very large.

PUBLIC FINANCING

There has been at the same time investment by public funds, from government to government, or by international agencies, amounting to about \$1.3 billion. In 1949 and 1950, another instalment of such investment has been made, so we may put that now since the war, about U. S. \$2 billion has been invested in the above-mentioned fields of activities in underdeveloped countries. Total investment, including grants-in-aid from the U. S. A., and grants through UNRRA are much larger, and I will give you these figures also.

TABLE D
INTERNATIONAL POST-WAR FINANCE, 1945—48
(000 Million U. S. dollars)

	Total	To under-developed countries
Private international investment from U. S. A. and Canada.	1 8	1 5
Private international investment from Europe	0 8	0 6
Public funds from W. Europe for colonial development.	1 8	1 8
Public funds—Total	32 0	11 7
Out of which Short Term transactions by U. S. A.	4 89	3 06
Surplus property credits	3 46	1 22
Government loans and grants	8 57	1 78
Export Import Bank	2 31	0 96
B. H. P.	5 15	1 09
I. M. F.	0 65	0 09
International Bank	0 65	0 13
International Bank (September 15, 1950)	(0 97)	(0 32)

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TABLE E
ESTIMATED FEASIBLE INVESTMENT, 1950-60 FOR FARMS
DEVELOPMENT (MILLION U. S. DOLLARS)

	Far East	Near East	Total under developed countries
Surveying and mapping of land	8	2	20
Irrigation, drainage	560	117	1,249
Farm machinery	200	200	2,450
Fertilizer factories	126	147	358
Rice and wheat milling	124	7	136
Grain storage	113	43	240
Total	1,129	516	4,452
Out of which, import requirements	713	376	3,403
Aggregate investments, 1950-53	10,900	1,700	66,600
Out of which, foreign investment	5,800	800	16,300

Altogether, the so-called underdeveloped countries have a little bit more than one-third of the whole flow of international financing in grants, short term and long-term loans

As against this appreciable flow of money, we must not forget that a very large part of this was for rehabilitation of war damage and that after the operations of UNRRA which were on a very large scale, there has been a period of a decided slowdown in international investments. For the last two or three years, the nations and the U N have been trying to find the best ways and means to organize international investment. The roads for international investment must be opened wider in an efficient way, because the needs are so great and I have here some figures from the plans which exist and the figures you will hear in this place are very great (see Table E)

The aggregated investments needed for the Far East, as they call it in this publication, and that includes probably all the countries that are represented here, for four years are given as about \$11 billion, out of which 5.8 should be foreign investment, about 5 billion domestic savings. For the Near East, the needs for that same period are assessed to be \$1.7 billion,

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out of which 800 million, or 50 %, would be foreign investment. The need of all the underdeveloped countries together, which includes also the Soviet Union and the satellite countries of the Soviet Union, comes to \$66 billion, out of which 16 billion foreign capital.

It is rather difficult to raise an amount of about \$4 billion a year for the development of the underdeveloped countries because Europe would need another 4 billion yearly investment. In order to give you an idea what that means, in U S A and Canada together, yearly domestic investments, which are more or less equal to domestic savings, run to a figure of about \$40 billion a year. Now to get from that \$40 billion about 8 billion for the development of other countries is not impossible but very difficult. Total investments from the U S A and Canada, which are the main countries able to do it, amounted to about \$7 billion yearly during 1946—48. Whereas Europe needs dollar investments, at the same time it could make investments in non convertible currencies to the other parts of the world.

FOREIGN AND DOMESTIC FINANCING

But you cannot expect a larger percentage of the U S A and Canadian investments to be channelled into the development of the so-called underdeveloped countries, without very large increase in the savings and domestic investment in the underdeveloped countries.

The following amounts would have to be realised in these regions

Far East	5 1 billion
Near East	. 0·7
Africa	. 3 9 (including investments from metropolitan countries)
Latin America	.. 6 2
	15 9

This would again amount to about \$4 billion yearly, and would mean that the need for the domestic savings and foreign financing are about equal.

In the Colombo Plan the percentage of domestic savings and investments also is about the same 50—50. That would mean that investments in the underdeveloped countries can be double through planned foreign investment. This would be a tremendous start, and according to another calculation made by the United Nations Secretariat, it would mean that 8½% of the national income of the underdeveloped countries should be devoted to development.

4 It is not enough that there is provision for domestic savings and investment and that there is a provision for foreign investment. They have to be linked up in an integrated development programme, of the type that has now been made by the Colombo Plan countries, because if there is no plan for international financing, then part of the domestic investments will be

used without an additional foreign investment and part of the foreign investment may be used without an additional domestic investment, and quite a number of projects which are essential for the country may not be carried out at all.

PRIVATE AND PUBLIC FINANCING

So the problem of financing economic development in the world as a whole on a sufficient scale is a huge task which has barely been tackled. There have been some international discussions as to how that can be done, how to raise the money, and how to give assurances to the people who invest their private savings in such a plan. All the publications that you read about it say that private foreign investment should play an important role, because it is absolutely unthinkable that any Parliament in the world and even the U S Congress, would be willing or able to raise all that money through taxation and savings and channel them into government to government loans.

So private investment has to come in on a much larger scale than now exists, and an analysis has been made by the League of Nations in 1945 and by the U N in 1949 showing by private foreign investment has almost absolutely stopped, and the number of reasons which are given for that is a long list. The list that has been made by the U N is about the same as that made in 1945, but there is one point which came out more strongly and that is the fear in private circles about investment in foreign countries, that by government regulations it will be difficult for them to have their profits and dividends transferred to their own countries, and repatriation of their capital in the original type of currency in case of expropriation. Inflexible provisions regarding foreign personnel—a certain percentage of the nationals of that country to form part of the personnel of that company, is another fear. The fear of compulsory participation with domestic capital, viz., that the government allows only 49% of the share capital to be foreign and the government takes 51% is very apparent. Sometime, there is a compulsory investment of the profit in the country where the money is going to be invested. In some countries there is a discrimination in taxation: a foreign company has to pay more taxes than a domestic company. Some countries have a very good treaty to avoid double taxation, but there are a number of instances where a company or a private firm has to pay taxes in the country where the company operates, and then, again, taxes in the country where the money comes from. If the taxation rates are rather high (sometimes 50%), that means that very little is left after the double taxation. Then there are restrictions on ownership of land or mine concessions which are given as a reason why in certain countries private investors do not like to come.

And there are other reasons, which all substantiate the fact that the historic events in the last century have on one hand created a feeling of misgiving in the financial circles in the world about investments in foreign countries. I have heard in the U . S A somebody saying: "Why should we invest our money in Latin America with the possibility of 6% profit, if we can make 10% in our country? We are not at all so keen to invest in Latin America with the risks that are there."

INTERNATIONAL CO-OPERATION IN FINANCING

So the atmosphere between receiving countries and countries that might invest is not at all good, and I believe that there is no possibility of revival of private investment on a large scale, unless these conditions are settled. They can only be settled by responsible talk between Governments in the world, whereby the fact that one country is in a position to invest and that another country would like to have foreign capital does not play a dominant place. What we are really concerned with is the development of the world as a whole and without full co-operation in international financing, between the so-called developed and so-called under-developed countries, nothing can be achieved in the form of private financing.

Some thing has been envisaged, but so far with very little practical success, in the Articles of Agreement of the International Monetary Fund. They declare that the members of the International Monetary Fund individually and together will promote the development of international investments. In the international Monetary Fund this is one of the rules of the agreement without much being carried out positively to achieve that aim. Later long conferences were held to establish an International Trade Organization, and in the Havana Charter there is an article on development of foreign investment which calls for "just and equitable treatment" of foreign investment.

Such rules are set out in Article 12 of the Charter in a very general way. Foreign investment should not be accompanied with political or economic pressure from the governments of countries where the capital is raised and that the government or its people should get a benefit from foreign investment. There has been in Geneva in 1947 and in Havana in 1948, a battle on the actual text of this article between the representatives of the countries there. The positive assurance in the article is expressed in the words "just and equitable treatment". Foreign capital may expect equitable treatment but cannot ask for any special favour. To invest with the assurance of equitable treatment, should be enough to risk your money in other countries. I believe that it has been the long struggle of committees between groups of countries, over the article that has made it more or less worthless. This is one of the reasons why the Havana Charter has been ratified only by Australia and Liberia, and it is questionable whether the Havana Charter will ever come into operation. In that case there is very little hope than an international treaty to which all countries could agree, comes into being.

In that case, it will be very difficult to revive the flow of investments from foreign countries. I would like to make this perfectly clear because I know that in some countries there is a feeling that the financial people in London and Wall Street are just waiting for an opportunity to send large amounts of money as investments in private enterprises or railways or shipping lines. They are not waiting. They had in the after war period so much opportunity of expending their business at home that they have little idea of shifting large amounts of capital outside their own country.

Here it is that government guarantees, government participation and international organizations will have to do the job. Here again, developments have so to say just started, but I say this with great regret, there is little assurance available about the necessary foreign investments for your reasonable development programmes. Even the Colombo Plan does not provide that. In the Colombo Plan there is only the provision that the U. K. Government has taken the responsibility for the foreign financing of Malaya and North Borneo, but not for the other countries.

Note—This fear has since been substantiated at the Torquay Conference.

Question—In how far does the General Agreement on Tariffs and Trade provide these assurances?

Answer—I am sorry to say that although the General Agreement on Tariffs and Trade has a provision that the broad principles of the Havana Charter should be adhered to by the countries that have entered into that Agreement, but Article 12 of the Havana Charter which at least contains a provision to enter into concrete negotiations and agreements is not included in the General Agreement. Part of the articles of the Havana Charter are included in the text of the agreement and part are not. The financing regulations and the avoidance of double taxation are not included in the General Agreement. At present, a conference is going on between the countries which have agreed to the General Agreement but these subjects are not on the agenda. I believe that if it would become clear that the Havana Charter will not come into existence, then the Agreement can go further and include the major part and may be all of the Havana Charter.

Coming back to the Colombo Plan, an assurance given there is about the further release of frozen sterling assets. As you have seen in the newspapers this morning, this has just been discussed in the House of Commons. The Colombo Plan further says that the general financing is not only the concern of the Commonwealth, but of the world as a whole.

But there are no proposals in the Colombo Plan to see that the large sums of money that are needed to carry it out are found somewhere. The nations that have taken part in the Colombo Plan hope for participation of the International Bank and of the U. S. Government (the Export Import Bank) for carrying out the Colombo Plan. As yet, there are no negotiations between the countries and these international banks for the necessary finance.

There has been in the United Nations a proposal to set up a new agency, the U. N. E. D. A. to give technical assistance to development programmes and at the same time financing it. This idea was not much favoured by any government for a number of reasons. It was stated that if the nations want to finance development through United Nations Agencies then the International Bank has been set up for the purpose of furnishing loans to underdeveloped countries for their development.

At the end of 1948, very little had been given by the Bank to the so-called underdeveloped countries. But in 1949 and in the first nine months of 1950, the International Bank has given out more than 320 million dollars, out of which 190 went to underdeveloped countries. And in the

the organization of the International Bank, much progress has been made strengthening the so-called country divisions of the Bank for Latin America, Africa, and Far and the Near East and at the same time more loans have been granted.

If this investment now goes at a rate of 2 to 300 million dollars a year in underdeveloped countries, it still is far away from the amount that has been put into development programmes of the countries concerned and I repeat that I am sorry to say that the basic solution to the financing of large development plans still has to be found. I should say that such solution will not be found unless the Governments come together and recognize that an adequate increase in domestic savings and foreign investments is the concern of everybody in all the countries and that all the nations have to play their part. It is not a question of two parties with different interests but one common huge problem. Otherwise, I do not see much chance for a large scale financing of economic development.

Outline for Presentation of Projects to the International Bank

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

Outline for the Presentation of Projects

The International Bank suggests the following general outline for presentation of all projects submitted as a basis for a loan. These projects should be separately documented in a manner as to provide full information concerning the technical and business aspects of the project.

1 DESCRIPTION OF THE PROJECT

Provide a general description of the project, including the objectives, location, power and transport facilities and similar items. Provide information on the technical details of the project broken down by principal item. These details should include the principal specifications covering equipment, buildings, and so forth. One or more general drawings will be helpful.

2. ESTIMATED COSTS.

Provide details of the estimated costs broken down by principal items as in 1 above. Give the expenditures by items in the various currencies required along with total figures. Include copies of any firm proposals or quotations which have been received on the various items.

3 CONSTRUCTION AND EXPENDITURES SCHEDULES.

Provide estimated schedules of construction and expenditures broken down by items if possible. Schedules of expenditures should be broken down into foreign and domestic currencies and the completion date for each item given.

4 PROPOSED METHODS OF FINANCING.

Provide information as to how the foreign exchange and internal currency requirements for the project will be obtained, with such details as are available of anticipated terms and interest rates.

5. RAW MATERIAL REQUIREMENTS

Provide information as to the sources of supply of raw materials required for operation of the project on completion, with quantities and delivered prices.

6. PRODUCTION COSTS.

Provide estimated production costs for typical materials to be produced by the project, these estimates being broken down into principal elements such as raw materials, direct labour, power, overhead, financial charges, and so forth.

FINANCIAL ASPECTS

7. JUSTIFICATION OF THE PROJECT

Provide a full justification of the project, including such items as anticipated cost reductions, increased earnings, foreign exchange earnings or savings, labour savings, and so forth. In case of a private enterprise to be financed, include in this section a comprehensive market analysis for the total production of the company which will operate the project. This analysis covering where possible the past three years and estimates for the next ten years.

8. COMPANY WHICH WILL OWN AND OPERATE PROJECT (IF APPLICABLE)

Provide information concerning: (a) the development of the capital structure of the company and the current distribution of principal stock holdings, (b) the legal structure, and (c) qualifications of management and workers.

9. FINANCIAL INFORMATION.

Provide summaries of balance sheets and profit and loss statements for the past (ten) years where available and estimates for the next (ten) years. Provide also a projected summary of the cash position of the company, giving anticipated revenues and expenses for the next (ten) years. Complete copies of financial statements for the past (ten) years are required where available. Provide also a list of outstanding long term obligations of the company with terms and maturity dates. Include a summary of the value of gross sales, net profits, reserves and dividends over the past (ten) years where available.

Power Projects

In the case of power projects, in addition to the general presentation suggested above, the following specific points should be covered:

1. Provide a detailed market analysis for the power to be produced from each plant, broken down by categories, such as domestic consumption, traction, public lighting, industrial, agricultural, and so forth. Provide statistics covering the past five years for consumption of electric power in the area to be serviced by the new station this data being broken down into the same categories as above and a projection for 10 years on the same basis.
2. Provide information on electric rates in the various categories covered above and estimated rates which will be obtained for the power generated in the new installations.
3. Provide information available on topographical surveys and water availability in the case of the hydro-electric stations. For steam stations, provide full information on the types of fuel to be used and anticipated availabilities. Fuel consumption and plant efficiency should be covered under "technical details".
4. Provide details of estimated production costs at various loads on the station. Provide also estimated daily and annual load curves on individual stations.

Irrigation Projects

In the case of irrigation projects, the general outline presented above should be used so far as applicable plus the following specific points.

1. Provide details of the present agricultural practice in the area to be irrigated, giving the average acreage planted per year in each of the crops grown, average yields per acre, and average gross and net income to farmers per acre from each crop. Give comparable estimates for the area after completion of the irrigation system. Provide substantiating statistics so far as possible.

2. Provide information on topographical surveys and water availability in the case of gravity systems. For pumping systems, provide information on the geological formation and data on existing pumping installations with reference to anticipated fall in water table.

3. Provide details of tests made in irrigated areas under similar conditions, giving information on actual yields, increased fertilizer requirements, salt accumulation, and similar points.

4. Provide complete information on revenues estimated to accrue to the agency operating the irrigation system, such as increased land taxes, water sales, and other income.

5. Provide a detailed market estimate for the crops to be produced after irrigation. If exports are contemplated, specify, if possible, countries of destination.

Port Projects

For Port Projects use the general outline above so far as practicable and cover the following additional points:

1. Provide information concerning the amount of cargo handled by the port broken down by principal classes. Provide comparable data as estimated for the next ten years.

2. Provide information on present and estimated future revenues broken down into principal sources.

3. Provide details of existing installations, including handling equipment, warehouses, storage yards, tugs, lighters, and dredges.

4. If dredging equipment is involved provide an estimated operating schedule for this equipment over the next ten years.

Railway Projects

For railway projects, use the general outline above so far as applicable plus the following specific points:

1. Provide a general description of the existing facilities, including track mileage and the number of locomotives and amount of rolling stock available. Provide information concerning the present condition of the installations and a description of repair and replacement facilities.

2. Give detailed traffic records over the past 5 years and estimates for the next ten years broken down into principal categories.

Loan Department, International Bank for Reconstruction and Development

VII Summary of Development Problems in South-East Asia

PRESSURE OF POPULATION AND TIME

I have just 20 minutes for the final word about the development of South-East Asia as a whole, and first of all I would like to state that I admire you all for the determination with which you and your countries and governments try to solve the problems of development in South-East Asia, because it is the most difficult development programme in all the world. In Africa and in Latin America, there are large untouched natural resources, and a small population and there you can so to say start a development problem on scratch. But in South-East Asia, you have to do that in the presence of about a billion people. It is like rebuilding refashioning your house, at a time when you have all your rooms filled with guests. If you could put them out sometime and then re-arrange everything in your house it would be much more easy. But you have to do it in a situation of an enormous pressure of population. And, therefore, the conditions to start with are infinitely more difficult than those of the U.S. or Canada or Africa or Australia or Soviet Russia or any of those countries, where they have the space to do it. And not only you do not have space but also you do not have the time, you cannot take a century for development like the U.S. did. You have to do it in a short time. So the courage which your countries, and nations, and yourself show by making these development programmes is really admirable.

BASIC CONDITIONS

(a) *Small mineral resources*

There are a few basic foundations in your development programme, which I must say all or mostly all add to your difficulty—one is that relatively you have small mineral resources as compared to Siberia or Africa or North America. The resources in coal and iron and copper and other ores are small. As compared to Africa, your resources of hydro-electric power are very small. The Congo river alone has more possibilities for hydro-electric power than all the rivers in this region together and the oil is mostly in the Near East which is out of your region. So you have relatively small mineral resources although, of course, they could be developed to 10 times of what they are now.

(b) *Small agricultural holdings*

Then in agriculture you have the area with the smallest holdings *per capita* in the world and that again makes it very difficult to shift to modern agriculture with modern techniques, because the farmer is in the same position where the country as a whole is, viz., on a very small holding with his family he would have not only to maintain a standard of living but to improve it by changing methods and rearrangement of farm plots and similar devices, and this is very difficult while you still have that large population on the land.

(c) Low labour productivity

What is the result of this situation is in itself a cause of difficulty—the low labour productivity—the great number of people and the limited amount of natural resources in minerals, power and agriculture means that you cannot have a high labour productivity. But, also, relatively it is very low and the best target for economic development would be raising of labour productivity both in agriculture and in industry, and in fisheries and in other resources. It is a very difficult job to do that.

(d) Low savings

Then as a result again of these conditions, as you have heard so often here during this course, the people just cannot make large savings. To put 4% of national income into investments is already a major endeavour. But 4% is a very low figure to sustain a modern economy. But it even will be most difficult to reach or to surpass the figure of 4% of national income into investments.

(e) Little internal trade

Then there is one last point, which I must admit is not so strong if we include Japan, China and India in the region, but it is very strong if we take South-East Asia proper, starting from Burma and including the Philippines and Indonesia. The economies of these countries are not complementary but they are similar. Their major products are about the same in all the countries, and the scope for enlarged trade between these countries, say between Burma and Malaya, the Philippines and Indonesia is very limited. And conditions are absolutely different from conditions in Europe, where on short distances the main products are much more different. Dr Singer has told you that it is a general rule that under developed countries have little trade with each other. May be that is not a necessity—there might be a large trade between different countries in not industrialized areas, but then the economy should be complementary—that one country produces just what the other does not have. Now these countries have all rice, rubber and vegetable oils and timber and other products, but none of them produces just what the other does not have. Fortunately, India, China and Japan are outside that inner circle of South-East Asia and there the economies are much more complementary. They can have an increasing trade with the inner area of South-East Asia, and that trade should be developed as one of the major items in the development of Asia as a whole, but that is limited and, therefore one of the basic foundations of your development programme must be an expanding trade with other parts of the world. In view of the fact that you miss so many of the raw materials and that you are excellently able to produce a number of other raw materials that the world needs makes an expanding trade with other continents as one of the major foundations of your development programme as I see it.

FALSE ISSUES

(a) Agriculture versus industry

Now I come to some false issues which often occur in discussions on the development of South-East Asia. The first is this: 'Should we develop

agriculture or should we develop industry' That is no problem. You should develop both, because if you would develop agriculture and neglect industry, then you never can get a higher labour productivity in some sectors of your society. If you would neglect agriculture then you would starve in the next generation. So there is no choice, you must develop both. And I believe that in economic planning as far as you are responsible for it, you should always deny to go into discussion, one or the other. You should always say, what we need is development in both directions.

(b) Food production versus export

The second issue may be is not so strong in these countries, whether you should indulge in food production or whether you should develop an agricultural product for export and again here I should say that is not the issue. You should as far as possible aim at self-sufficiency in your major food products, but that should not hamper your export agriculture because under conditions which I mentioned two minutes earlier, your export of agricultural products to other parts of the world in the absence of ores and other minerals is one of the major items which you have to use as source of foreign exchange for your development. You should try to develop your export agriculture in quantity and in quality and by a common economic policy endeavour to get a decent price and as far as possible a stable price for the export of your agriculture to other continents.

(c) Foreign capital

The third false issue is 'whether you should welcome or whether you should be shy of the participation of foreign capital'. You could never reach the quick development that you need without foreign capital. The only issue that comes there is 'On what conditions and in what form shall we attract foreign capital' but the issue of doing without it is something like 'Economic Suicide'.

RESOURCES DEVELOPMENT

In a development programme, you have the development of your natural resources, of your human resources, and of your financial resources.

(a) Natural resources

As regards the natural resources, again in the absence of much minerals, they are the land, partly the forest and the sea. The enormous pressure of population on the natural resources means that the first foundation of every economic development programme is to be absolutely careful about the use of your natural resources. The use of the land, the use of the water, the use of the fish in the water and of the forest, that are the corner-stones for the bare living of your grand-children and great-grand-children, and if you use them up now, then Asia will be a continent of starving millions of people 20 years from now, and I say that in all earnestness. If you see how the hill-sides in large parts of Asia have been denuded in the last 60 years, that is a tragedy. And in spite of the fact that you might have income and may get large income by using up forest and land resources, you should be very

careful and, therefore soil erosion fighting of water logging and alkalinity—good land use in this area is at the roots of your future development and income

(b) *Human resources*

As regards the human resources, you are still a continent of villages. I have been told that there are a million villages in the Indian sub-continent and may be there are two million villages in the whole of Asia. Still every village is more or less a social unit and a big problem in the development of your human resources is to make a wide use of the existing village community tie without falling in the pitfall just to lurch those ties without bringing in new blood, new spirit in them. And a big problem is to find a system of education in the village

(c) *Village organization*

Rural reconstruction plans or agricultural extension and education plans may work very well for 100,000 people but your problem is to extend it to 100 million. And that is an enormous problem of organization and of education. And that may be does not give you a large addition to national income in the next 10 years, but I believe you are up against an enormous disaster and perhaps sweeping revolution in the villages if you do not give the people the organization and the education to reach a higher standard of living and a higher way of living in the next one or two generations. That is an enormous problem, it does not need so much foreign capital but at the same time, in my opinion cannot be paid out of the existing resources of this continent

(d) *Population pressure*

There is one very big problem about your human resources that is, how far will your population continue to rise. Will your human resources be an asset to your country or will they become a liability. I believe that if your human resources are of a good quality, they will not be a liability, but there is also there an optimum which you cannot pass without large danger, and as I have said often, I repeat especially that the education of the girls and of the women in this region is of the utmost importance to get some equilibrium in the increase of population. Of course, if your population became stagnant and there would be no increase, then probably the growing power of your whole country is diminished but the rate of increasing should be in some relation to the development of the economic and the spiritual resources in the country itself

(e) *Financial resources*

Now we come to the financial resources and I have already said you will need capital from outside, you will need your domestic resources *plus* capital from outside for direct productive purposes. But in the second place you will need an enormous amount of investment in social capital, especially in education, and I do not believe that you can raise all that you need in your own country and I express my personal opinion that it is the duty of countries with higher national income to devote part of their income to such a programme

But I do not believe that you can achieve that by way of Point 4 programme as it now stands, where money has to be allotted through acts of parliament in a number of countries in America or in Europe, and I do not believe that you could base your plans for the formation of social capital on grants-in-aid from other countries. That would be politically impossible to continue for a long period in the more developed countries, and it would be politically impossible for you to accept it. It would be morally impossible for you to accept during a long period grants-in-aid for this social capital.

(f) Prices of raw materials

Therefore, the funds for this development have to come from present income, and the raw materials and other products that you can export to other parts of the world should, in my opinion, be the main source of the social capital that you need. That means in the first place that it is a primary responsibility of all the government, and all the nations to see that a future slump in the prices of those raw materials is avoided. The slump of the 30's has done tremendous harm to this development of education and other social services in the whole of Asia. All at once all the governments stood up against a large deficit and a large part of the development in this sector between 1920 and 1930 has been disrupted abruptly by the prices of the 30's and that should not happen again.

The people in your country could not stand it again as they did in the 30's. They are much more awake now of their position in the world and they would make a revolt, if again they were deprived of the possibilities of educational development and hygiene and health and other social services.

So a good co-operation between all governments on the price relation of industrial products and primary commodities especially agricultural primary commodities, in my opinion, would be the only possibility to finance the social and educational development of Asia. That will mean that the countries, and that applies as well to your countries as to the countries on the other side of the world, should come to a common trade policy and to agreements about the use of the proceeds from the natural resources. Now your countries are indulging in export duties. In the 30's, other countries were indulging in import duties of certain products. If those trade policies are not integrated and there is no permanent understanding as to the use of the money that is derived in that way, this will end up in economic chaos. Whether you take the money by export duties or by import duties in the importing countries, the consumers and the industrialists in the higher developed countries have to pay the margin that is taken off by the governments on this side or on the other side of the ocean.

(g) International co-operation

I believe that the primary need for the social development of Asia, which I believe is the cornerstone of your economic development, would be an agreement to set aside part of the proceeds of the exports for social and educational purposes. In times of high prices, it may be an export duty ;

in times of low prices, it may be an import tax. In times of normal prices, there would be no taxation of consumers and there would be no grant, but it would be a common understanding for a common aim, whereby, I believe, you could raise large amounts of money that are to be invested in this sector of your development programme

So let me again repeat—I may use one more minute—the problems that are facing you are baffling. They are the most difficult economic problems that the world ever has had to solve, and if you are able to pull through and if after 50 years Asia will be a flourishing country of happy millions and of healthy, well educated nations, then it will be partly the result of your endeavour. I hope you succeed and I wish you every success.

VIII The Thal Development Plan

In connection with the excursions to the Thal district and the lectures of Dr. Lund on the subject, I will give you some general economic aspects of the development plan

INCREASE IN AREA AND PRODUCTION

The plan envisages in the first place an acceleration of the use of 1 4 m. m acres of land to be irrigated by a system of Irrigation—Canals, that already has been built to the extent of Rs 100 m m. Another Rs 50 m m. are now invested in branch canals and smaller canals

It is assumed by the government that it would take 18 years to settle the area, if no T D A had been established, and that 660,000 acres under direct supervision of T D A will come under cultivation in a period of six years

An additional advantage of the project is that 250,000 refugees are being settled and that their *total productive income* in the Thal area can be considered as a net increase of the National income. No allowance need to be made for income, which these refugees could have had in other places in the Punjab, taking into account the pressure of the land and difficulties to find alternative uses of their labour

It has been established, that the T. D A has a beneficial effect on the exploitation of the proprietary lands in the region and that the reclamation of these lands has also been accelerated—partly as a result of speculation on a rapid development of the area, partly because water and roads became available, partly as an imitation of the methods of the T. D A.

An estimate of the additional primary national income at farm level must rest on a number of assumptions —

(a) Prospective acreage in use with T D. A on T. D A lands and proprietary land as against proprietary land without T. D. A (Table F)

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TABLE F

EFFECT OF T. D. A. ON ACCELERATION OF SETTLEMENT
(1,000 ACRES)

Year	With T D. A			Without T D A	Profits in cultivated area
	On T D A land	On proprietary land	Total		
1		90	90	90	
2	50	120	170	120	50
3	150	160	310	170	140
4	300	200	500	230	270
5	450	240	690	290	400
6	600	280	880	350	530
7	660	320	980	410	570+
8	660	360	1,020	470	550
9	660	400	1,060	530	530
10	660	440	1,100	590	510
11	660	480	1,140	650	490
12	660	480	1,140	710	430
13	660	480	1,140	770	370
14	660	480	1,140	830	310
15	660	480	1,140	900	240
16	660	480	1,140	970	180
17	660	480	1,140	1,050	90
18	660	480	1,140	1,040	.

(b) Average productive income on the farms under these different circumstances, and the increase in time.

It has also been assumed, that total crop income on a 15 acre farm in the Thal area amounts to Rs 1,400 out of which Rs. 270 has to be deducted for

FINANCIAL ASPECTS

repairs, purchase of materials, and repayments to the T D A. These repayments will in 25 years give the farmer a house and 15 acres of land. The expense by T. D. A. to build those houses and reclaim the land, however, in the first instance are largely paid out of national income. This would amount to Rs 75 per acre addition to national income. It has further been assumed, that present proprietary land yields only Rs 800 on 15 acres, out of which Rs 750 would be productive income, adding to national income Rs 50 per acre.

(c) It has further been assumed that under T. D. A. also net yields per acre increase more rapidly than without T. D. A., but that government research and advice would in the long run create a tendency for higher yields, (Table G), even without T. D. A.

TABLE G
ASSUMED ADDITION TO NATIONAL INCOME ON FARM LEVEL
PER ACRE OF FARM LAND

Year	On T. D. A. land	T. D. A. on proprietary land	Without T. D. A. on proprietary land
1		50	50
2	50	50	50
3	60	52	51
4	65	54	51
5	75	57	52
6	76	60	52
7	etc	65	53
8		70	53
9		etc	54
10			54
11			55
12			56
13			56
14			57
15			57
16			58
17			59
18			60

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With these assumptions, it is possible to calculate the difference in productive income on the farms resulting from the existence of T D A (Table H) The result would be, that the maximum gain in farm acreage is made in the 7th year, viz , 570,000 acres, and the maximum gain in productive income on farm level in the 8th year with about 50 million rupees

TABLE H

NATIONAL INCOME ON FARM LEVEL IN THAL AREA (MILLIONS OF RS)

Year	With T D A		Total	Without T D A	More farmers income
	On T D A land	On proprietary land			
1		4 5	4 5	4 5	
2	2 5	6 0	8 5	6 0	2 5
3	9 0	8 3	17 3	8 7	8 6
4	19 5	9 8	29 3	11 7	17 6
5	33 7	13 7	47 4	15 0	31 6
6	45 0	16 8	61 8	17 8	44 0
7	49 5	19 9	69 3	21 7	47 6
8	49 5	25 2	74 7	24 0	49 8
9	49 5	28 0	77 5	28 6	48 9
10	49 5	30 8	80 3	32 5	47 8
11	49 5	33 6	83 1	36 4	46 7
12	49 5	33 6	83 1	39 8	43 3
13	49 5	33 6	83 1	43 1	40 0
14	49 5	33 6	83 1	47 3	35 8
15	49 5	33 6	83 1	51 3	31 8
16	49 5	33 6	83 1	55 3	28 8
17	49 5	33 6	83 1	62 0	21 1
18	49 5	33 6	83 1	68 4	14 7
					18/559/31

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At the end of an 18 year period, there would be no gain in acreage, but still about 15 m. m rupees profit from better farm practices, shelter belt maintenance, etc

The increase in agricultural production will result in a general economic activity in the region and also outside the region proper. Taking as a basis the provision for houses for artisans and the plans for some small towns, it may be assumed that the number of non-farmers in the area will be about 30% of the number of farmers, and that their productive income will be at least equal to the average farmers income

The products to be sold outside the region, in the case of wheat and cotton even to foreign countries, are to be transported along road and railway, have to be ginned and packed. Last not least, traders in different stages make a profit and a living. It may be safely assumed that the differential between farm level and end destination within the country amounts to 30% of the level of farm value. Consumption on the farm has been taken into account

In the third place, the newly developed area will buy a number of domestic products from outside the area. This gives additional productive income till an estimated amount of 15% of the net farm value produced within the area

The secondary benefits may not be exhausted by this rough calculation, but with 75% in total they will not be over estimated. Under the conditions of the Thal area and in similar cases, where little or no productive resources are taken away from other activities, the "multiplier" effect may be around 2.00. We will, however, assume that it is only 1.75

This would enable an estimate of the total addition to productive national income as follows .—

Year	Direct	Indirect	Total	Year	Direct	Indirect	Total
1				10	47 8	35 9	83 7
2	2 5	1 8	4 3	11	46 7	35 0	81 7
3	8 6	6 4	15 0	12	43 3	32 4	75 7
4	17 6	13 2	30 8	13	40 0	30 0	70 0
5	31 6	23 9	55 5	14	36 8	27 0	62 8
6	44 0	33 0	77 0	15	31 8	24 0	55 8
7	47 6	35 9	83 5	16	26 8	19 8	46 6
8	49 8	37 2	87 0	17	21 1	15 8	36 9
9	48 9	36 6	85 5	18	14 7	11 0	25 7

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In the sixth till twelfth year the maximum profits would be obtained by the acceleration, to an amount of around Rs 80 m m yearly

INCREASE IN REVENUE

Income from the T. D. A scheme for the Government is, largely dependent on the rate of acceleration. Land revenue and other taxes are taken at Rs 8 per acre for the T D A area and Rs 4 per acre for the other area affected by the T D A and also in case of no T D A

There will be additional traffic and transport, and railway income is taken at about 5% of farm incomes. A survey has been made by the Railway department, but these calculations were not available at the time of writing. Taxation of secondary income is put at 10%.

Road tax, a special tax of 2½ annas per gallon on gasoline and other taxes are estimate to yield a maximum of Rs 600,000 in the T D A area, 200,000 outside the T D A area, and 500,000 in case there would be no T D A.

If a cotton export duty is levied, income of the government will increase very considerably. On a basis of Rs 60 per bale or Rs 300 per ton, a yield of 20,000 tons would give an additional income from export duty of 6 m. m. rupees. This has, however, not been taken into account

T D A is paying an interest to the government, which is assumed to equal to the interest, which the government has to pay on its bonds. Both figures are assumed to neutralize each other.

In tables J. K. L a calculation of the main benefits inside and outside the T. D A area and the difference which it makes are given

The total figures are summarized below, rounded off in million rupees.

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TABLE J
GOVERNMENT INCOME IN THAI DEVELOPMENT AREA

<i>Year</i>	<i>Land revenue</i>	<i>Railway</i>	<i>Taxation of secondary income</i>	<i>Road and Gas Tax</i>	<i>Total</i>	<i>Total Profit</i>
1		225	340		565	
2	400	425	640	200	1,665	
3	1,200	865	1,300	300	3,665	
4	2,400	1,465	2,200	400	6,465	
5	3,600	2,370	3,580	500	10,050	
6	4,800	3,090	4,630	600	13,120	
7	5,280	3,465	5,200	600	14,465	
8	5,280	3,735	5,600	600	15,215	
9	5,280	3,735	5,600	600	15,915	
10	5,280	4,015	6,025	600	16,265	
11	5,280	4,155	6,230	600	16,265	
12	5,280	4,155	6,230	600	16,265	
13	5,280	4,155	6,230	600	16,265	
14	5,280	4,155	6,230	600	16,265	
15	5,280	4,155	6,230	600	16,265	
16	5,280	4,155	6,230	600	16,265	
17	5,280	4,155	6,230	600	16,265	
18	5,280	4,155	6,230	600	16,265	
					<hr/> 227,315	

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TABLE K

GOVERNMENT INCOME OUTSIDE THAL DEVELOPMENT AREA

<i>Year</i>	<i>Land revenue</i>	<i>Railway income</i>	<i>Taxation of secondary income</i>	<i>Road and Gas Tax—other taxes</i>	<i>Total</i>
1	360	225	340		925
2	480	300	450	50	1,280
3	640	415	625	80	1,760
4	800	490	735	100	2,125
5	960	685	1,130	120	2,895
6	1,020	840	1,260	140	3,260
7	1,280	990	1,445	160	3,875
8	1,440	1,260	1,890	180	4,770
9	1,600	1,400	2,100	200	5,300
10	1,760	1,540	2,310	200	5,810
11	1,920	1,680	2,520	200	6,320
12	1,920	1,680	2,520	200	6,320
13	1,920	1,680	2,520	200	6,320
14	1,920	1,680	2,520	200	6,320
15	1,920	1,680	2,520	200	6,320
16	1,920	1,680	2,520	200	6,320
17	1,920	1,680	2,520	200	6,320
18	1,920	1,680	2,520	200	6,320

FINANCIAL ASPECTS

TABLE L
GOVERNMENT INCOME WITHOUT T. D. A.

Year	Land revenue	Railway	Tax of secondary income	Road and Gas Tax	Total
1	360	225	340		925
2	480	300	450	100	1,330
3	680	435	650	150	1,915
4	920	585	880	200	2,585
5	1,160	750	1,120	250	3,280
6	1,400	890	1,330	300	3,920
7	1,640	1,065	1,630	325	4,680
8	1,880	1,245	1,870	350	5,345
9	2,120	1,430	2,150	375	6,075
10	2,460	1,625	2,440	400	6,875
11	2,600	1,820	2,730	420	7,570
12	2,840	1,990	2,980	440	8,250
13	3,080	2,155	3,200	450	8,885
14	3,320	2,365	3,500	460	9,645
15	3,600	2,565	3,800	470	10,435
16	3,880	2,815	4,200	480	11,375
17	4,200	3,100	4,600	490	12,390
18	4,560	3,420	5,130	500	13,610

GOVERNMENT INCOME UNDER DIFFERENT ASSUMPTIONS

Year	Inside T. D. A area	With T D A on proprietary land	Total	Without T. D. A.	Net benefits of T D A
1	0 56	0 92	1 48	0 92	0 56
2	1 66	1 28	2 94	1 33	1 61
3	3 66	1 76	5 32	1 91	3 41
4	6 46	2 12	8 58	2 58	6 00
5	10 06	2 89	12 94	3 28	9 66
6	13 16	3 26	16 42	3 92	12 50
7	14 46	3 87	18 33	4 68	13 65
8	15 21	4 77	19 98	5 34	14 64
9	15 91	5 30	21 21	6 07	15 14
10	16 26	5 81	22 07	6 87	15 20
11	16 26	6 32	22 58	7 57	15 01
12	16 26	6 32	22 58	8 25	14 32
13	16 26	6 32	22 58	8 88	13 70
14	16 26	6 32	22 58	9 64	12 94
15	16 26	6 32	22 58	10 43	12 15
16	16 26	6 32	22 58	11 37	11 21
17	16 26	6 32	22 58	12 39	10 21
18	16 26	6 32	22 58	13 61	8 97

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CAPITAL INVESTMENT

The capital investment can be divided as follows —

	<i>Inside T D A area</i>	<i>Outside T. D A area</i>	<i>Total</i>
Irrigation .	75 m m	75 m. m	150 m m
Roads	20 m m.	10 m m	30 m m
Grant to T D A ..	29 m m		29 m m
Loan to T. D. A .	90 m m		90 m m
Total	214 m m	85 m m.	299 m m
<i>Deduct—For betterment tax..</i>	30 m m	20 m m	50 m m
Sale of land in T. D. A area	10 m m	.	10 m m
Net investment of Government	174 m m	65 m m	239 m m

The loan to T. D. A. will be paid off in about 30 years but the betterment tax will not be collected all at once. It, therefore, is safe, to assume that on the average the full 174 m. m. will be invested in the area.

If there had been no T. D. A., the capital investment can be calculated as follows :—

Irrigation ..	150 m. m
Roads ..	25 m m
Public buildings ..	25 m. m
Total	200 m. m

A betterment tax, if introduced, would have brought no more than 25 m m. Note, that the public buildings now are built by T. D. A. and more or less covered by the grants from Central Government in Province.

MAINTENANCE AND LOAN CHARGES

Interest on investment and maintenance of irrigation works and roads are the main items in the yearly expenditure. The life time of the irrigation works and roads is very long, maintenance is taken at 3%, a figure, which includes gradual improvement. No depreciation is, therefore, considered necessary. On the public buildings use and maintenance is part of the general services of the government. Cost of health services and education are not calculated as costs of the programme. However, depreciation and maintenance charges are taken at 3% in case of no T. D. A. Where T. D. A. operates, this body will for the first 18 years take care of these expenses.

FINANCIAL ASPECTS

Under the T. D. A. scheme, yearly charges are assessed at the following figures. —

	TO BE CHARGED		
	Against T. D. A. area	Outside T. D. A. area	Total
<i>Interest</i>			
4% on 90 m. m. loan ..	P. M.		P. M.
3% on rest of investment .	3,720	2,550	6,270
<i>Maintenance</i>			
Irrigation works 3% ..	2,250	2,250	4,500
Roads Rs. 1,000 per mile	400	200	600
Public buildings	P. M.	375	375
Total	6,370	5,075	11,745

Comparison with paragraph 2 shows that inside the T. D. A. area costs are covered already in the fourth year, outside the T. D. A. area in the ninth year, and for the total district in the fifth year. Over the 18 year period, average income in the T. D. A. settlement area runs into 12.6 m. m. and in the proprietary area into 4.6 m. m. For the T. D. A. area, therefore, there is an average surplus of 6.2 m. m. for the proprietary area an average deficit of 0.5 m. m. The total area shows a profit of 5.8 m. m., which means that the investment brings nearly 6% interest.

If there had been no T. D. A., yearly charges would have been lower. Progress in irrigation and roads would have been slower. As on irrigation already 100 m. m. has been paid, the interest charge would start with 3% on 100 m. m. and gradually increase to 3% on 175 m. m. Maintenance equally would not be so high in the beginning. It is assumed, that the full charges would have been reached in the 10th year.

These charges are calculated as follows. —

			1st year	10th and following
<i>Interest</i>				
3% on investment .. ..	..	..	3,000	5,250
<i>Maintenance</i>				
Irrigation works 3% .	.	.	3,000	4,500
Roads	500
Public buildings	750
Total charges			6,000	11,000

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In the later period, the charges would be about equal to the charges under the T D A. scheme. A gradual increase between the 1st and 10th year of 500 yearly may be assumed.

As is seen in table L in the 10th year still income would be below the charges, and only in the 16th year a net balance would have been reached. During the first fifteen years of slow development, a total deficit of Rs 58 m m can be calculated from these figures. In the final stage, the ratio between annual income and charges is 13,610 : 10,900 and, therefore, considerably less beneficial than with T D A. Even maintenance would barely have been met in the first 10 years.

SUMMARY

The *financial justification* of the T D A therefore, is first of all the avoidance of a loss on already invested capital to an amount of approximately 58 m m in the first 15 years.

The additional investment can largely be put in the T D A at an interest rate of 4% and a margin is left to justify grants to the area amounting to Rs 29 million.

The *economic justification* is first of all an addition to the productive income of the nation to an amount of Rs. 80 m m yearly from the sixth to the twelfth year and further increases in years together with secondary income accruing to Rs 150 m m. This is $\frac{1}{2}$ —1% of the total Pakistan national income.

It will produce for the world market—

Wheat	190,000 tons @ 150 Rs	= 28.5 m m
Cotton	20,000 tons @ 900 Rs	= 18 0 m m
Gram	60,000 tons @ 120 Rs	= 7 2 m m
Oilseeds	25,000 tons @ 250 Rs.	= 6 2 m m
Gur (sugar)	50,000 tons @ 180 Rs	= 9 0 m m.

Total	70.0 m m.
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This new production will either increase exports or decrease imports of certain agricultural products.

The only drawback of the scheme, if U. S. A. equipment is used, is the very limited possibility to export these commodities in a dollar market. The *balance of payments justification*, therefore, is more or less restricted to the Eastern hemisphere.

The social justification is primary in the settlement of a large number of refugees. Moreover, a *social justification* is the greatly increased standard of housing, health and education, combined with better farm practices, which is made possible in the plan.

POSSIBILITY OF ADJUSTMENT OF SCHEME

With regard to these social services, however, a word of *caution* seems at place. It is foreseen that the settlers will pay for their houses and social services. It must be remarked, however, that nearly 50% of the capital

FINANCIAL ASPECTS

expenditure of T. D. A. is to be used for housing, community buildings and similar social capital. In spite of the fact that the Government has given a grant of Rs 29 m. m. settlers will have to pay for it, if T. D. A. is self-liquidating (alternatively future changes might have been lower). This payment is included in the price for the land and amounts to Rs 54 million apart from the house and cattle shed on which 4% interest has to be paid. For 55,000 settlers, this approximately another Rs. 1,000 per settler.

Housing and social services, therefore, account for at least 50% of the total loan of Rs 3,750 that has to be given to the settlers. This is a heavy burden on these settlers and any way of *economizing on these expenses* would greatly enlarge the economic success of the scheme. Some postponement and subsequent work done by the settlers themselves might be possible.

My personal advice to the Thal Development Authorities has been to see whether the costs for housing and social services might be put down a bit by putting in more labour of the settlers themselves and may be giving them material instead of the finished thing. The second suggestion which I had made was about the betterment tax, which the government is taking there to a maximum of Rs. 60 on an acre. Now if a man has to pay that through the Thal Development Authorities for one holding that means Rs 900 on a loan of Rs 3,750. With some economies on housing and communal buildings, the result might be an appreciable lower debt to start with. I made the calculation (table M) myself what it would mean to the farmer if in the first two years about half of the proposed payments were to be made. I personally believe that in the first two years, farmers have a very hard time and are not able to pay any large amount of money. Secondly, it seems advisable to divide the Rs 900 betterment tax, over 30 assessments every half year for 15 years. You might go into the document of Dr. Lund and see what an enormous difference it would make in the payments for the farmer, if he had 16 years altogether to pay off his loan, as in the scheme of Dr. Lund. See how much easier the whole thing for him would be with some economizing and not paying 4% interest on the betterment tax over a period of 15 years.

TABLE M

REVISED SCHEME FOR REPAYMENT OF LOAN IN THAL DEVELOPMENT AREA

Year	Loans	Betterment tax	Interest	Principal	Total payment
1st	2,500	60	100	50	210
2 1/2	2,450	30	49	50	129
2 2/2	2,400	30	48	50	128
3 1/2	2,350	30	47	100	176
3 2/2	2,250	30	45	100	175

contd.

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TABLE M--concl'd

Year	Loans	Betterment tax	Interest	Principal	Total payment
4 1/2	2,150	80	43	100	173
4 2/2	2,050	30	41	100	171
5 1/2	1,950	30	39	100	169
5 2/2	1,850	30	37	100	167
6 1/2	1,750	30	35	100	165
6 2/2	1,650	30	33	100	163
7 1/2	1,550	30	31	100	161
7 2/2	1,450	30	29	100	159
8 1/2	1,350	30	27	100	157
8 2/2	1,250	30	25	100	155
9 1/2	1,150	30	23	100	153
9 2/2	1,050	30	21	100	151
10 1/2	950	30	19	80	129
10 2/2	870	30	17	80	127
11 1/2	790	30	16	80	126
11 2/2	710	30	14	80	124
12 1/2	650	30	13	80	123
12 2/2	570	30	12	80	122
13 1/2	490	30	10	80	120
13 2/2	410	30	8	80	118
14 1/2	340	30	7	80	117
14 2/2	260	30	5	80	115
15 1/2	180	30	4	80	114
15 2/2	100	30	2	80	112
16 1/2	20		1	20	21

IX The Colombo Co-operative Plan for South and South-East Asia

NATIONAL INCOME

I would like to discuss some features of the Colombo Co-operative Plan for South East Asia. I tried to put the national plans on a comparative basis as far as possible, by converting money values into British Pound Sterling and to give a presentation of some of the features of the plan in a consistent way. Here and there I had to guess. The national income for North Borneo is not available. For India it is based on 347·44 million people and for Pakistan on 82·23. For the states forming part of the Indian Union, the document makes a guess about the national income. For Ceylon it is stated that the figure for national income is obviously under-estimated. I quite agree that all the figures that are established for Ceylon indicate that national income would be considerably higher. Surely the national income of Ceylon is largely dependent on the price of tea, rubber and copra but it must be considerably more than ? £23 and just as an assumption I have taken that it is \$30 *per capita* and L 220 in total.

	India	Pakistan	Ceylon	Malaya	N. Borneo
Population	3,47*	82	7,3†	6,1	0,9
National income	7,200	1,840	220	385	N. A.
<i>Per capita</i>	21‡	24	30	63	N A

In your planning work you may have difficulties because statistics are not available or unreliable. If you then make assumptions you have to state that clearly. To compare the situation of different countries it is very valuable to put them on a national income basis and a *per capita* basis. A figure of a development programme of India and Ceylon cannot be compared as such because India is a much larger unit when compared to Ceylon. But it may be that relatively the programme for Ceylon is much larger than India, if you compare it by taking a percentage of the national income.

*A figure of Rs 78,105 is given for the Union Provinces only, for the whole of the Indian Union it is estimated at Rs 96,000—the latter figure is taken

†The document gives £1,70, but states that this figure is an obvious understatement

‡The document gives £23, but this applies obviously only to the Union Provinces with 250 m m inhabitants.

FINANCIAL ASPECTS

or as investment *per capita*. That really gives the speed with which the development programme has an impact on the nation.

	Six year plan 1951—57 m. m £	In % of yearly national income	Per head of population
India	1,379	17	4/0/0
Pakistan	280	16	3/8/0
Ceylon	102	47	14/0/0
Malaya	98	25	15/0/0

Relatively, the smaller countries have by far the largest development programme.

BUDGET

Now we see the relation to the *budget* in the different countries, as far as possible again in 1949 or 1950 where available. Some of the relevant figures were missing, the development expenses in the budget of India and in Malaya and the general administration in Pakistan. About the development expenditure in the budget, I found at a different place in the plan figures for the development expenditure for India (169) and for Malaya (4). It is not absolutely clear how far loans have been made and charged against development. The Government of India in its presentation may have put all the loans against development, because you see that the budget is in equilibrium with the income and expenditure (535), but loans for development are not included. It might be possible, after a detailed analysis of the budget to charge some loans against other parts of the budget as well.

Budget Expenditure	India*	Pakistan	Ceylon	Malaya
				N Borneo
General Administration	107		5	15
Defence	126	56	1	9
Social Services	112	16	21	11
Development	169	24	11	4
Others	±140	97	18	26
Total	±650	193	56	65
In % of national income	9	10.5	25	15 (Malaya)
Per capita	1.9	2.4	7.5	2.5

*Revenue and expenditure of railways is excluded.

contd

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Revenue	India*	Pakistan	Ceylon	Malaya
				N Borneo
Income Tax	129	10	9	9
Taxes on commodities	190	54	28	32
Other income	216	69	6	22
Total	535	133	43	63
In % of national income	7.4	7.5	19.5	14.8 (Malaya)

*Revenue and expenditure of railways is excluded

We have the revenue in the lower part of the table and you see that in all these countries there was a deficit in the budget, with the exception of Malaya where it is about equal. It may well be that the development programmes and other expenditures of the countries make it necessary or even advisable to make loans for development.

The note applies to India, and it is a pity that we do not have the budget of the railways because the development programme will for a considerable part be financed through the surpluses and depreciation account of the railways. So at this point the presentation of the plan really has a big gap, which should not have been difficult to include. If later on you make a plea for the fact that you can finance a large part of the domestic finances by profit and depreciation of your railways, then some figures on the railways should be included.

Let us now see what percentage of expenditure is being used for development and for social services. It is also useful to calculate what percentage of revenue has been used for development and social services, and a third method would be to ask what part of national income has been used for development and social services through the government expenditure in the budget in one way or another. In the table, figures are set against the national income.

SELECTED EXPENDITURE IN % OF NATIONAL INCOME

	India	Pakistan	Ceylon	Malaya
				Singapore
General Administration	1.5		2.3	3.8
Defence	1.7	3.0	0.5	2.5
Social Services	1.5	0.9	9.5	3.0
Development	2.3	1.4	5.0	1.0

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You see that Ceylon in its budget, especially because it has such a high taxation and because it needs no defence, can use 15% of its national income for social services and development. I again repeat, when Dr. Chellappah said here in this course that the people of Ceylon get those services without payment, in reality they pay 10% of their national income for it. And compared with Pakistan and India, the performance of these services to the people may be expected to be much better. In Malaya, social services use 3% and development 1%, together about 4% of national income. The figures for development are the ones with which we are most concerned, and you see that besides Ceylon they are rather low, they are below 2-1/2% in India and about 1-1/2% in the case of Pakistan and of Malaya, and the Colombo Plan aims at raising that figure considerably. Here, however, we must be very careful, because the Colombo Plan is not an addition to present government expenditures, partly it is a drawing together of present government activities, and an enlargement.

BALANCE OF PAYMENTS SITUATION

In the *balance of payments* you see imports and invisible payments against exports and invisible receipts. There, again, you see that India and Pakistan have a rather large deficit on their balance of payments. Ceylon and Malaya, on account of the high prices of tin, rubber, tea and copra in 1949 and 1950, are in equilibrium, in spite of the development imports which have been made.

BALANCE OF PAYMENTS 1949 OR 1949-50

	India	Pakistan	Ceylon	Malaya N. Borneo
Imports	451	120	77	232
Invisible payments	92	20	17	29
Total	543	140	94	261
Exports	314	106	80	222
Invisible receipts	110	9	12	40
Total	424	115	92	262
Surplus				1
Deficit	119	251	2	
<i>1952-53 forecast</i>				
Imports	583	176	99	319
Invisible payments	87	10	24	31
Total	670	186	123	350
Exports	404	152	94	303
Invisible receipts	112	1	15	40
Total	516	153	109	343
Deficit	154	33	14	7

Invisible payments are payments for the service of outstanding debts of freights that have to be paid to foreign shipping lines and all sorts of financial regulations, which the respective governments have with other governments or international institutions. It also covers the cost of foreign representation of the country—in general, all transactions outside the exchange of commodities. Those figures have to be analysed in detail, because they are not in the summary of the Colombo Plan.

IMPACT OF PROGRAMME ON BALANCE OF PAYMENTS

In Table III the balance of payments are given for 1949-50, and for 1952-53, the latest year for which comprehensive forecasts are given. The deficit of all the countries in 1952-53 is larger than the deficit in 1949-50. This does not show that the position of the country is deteriorating but just shows that more imports, without increasing exports at the same rate, are the consequence of foreign exchange income for the development programme. I hope that this point is quite clear, that you should not say because I have a shortage in my balance of payments on my current account that means that my country is in a very bad position. It may be that your country is in a period of very rapid development with the help of foreign capital.

As to the question raised, whether a forecast for the invisible receipts can be made, I should say—Oh, sure, yes the government and the State Bank have a breakdown of this general figure in many items and they are calculated and extrapolated. For quite a number of items they know what is going to happen, because there are commitments and the other countries have commitments. That is a whole net work of relations and they are all worked out and the data are available or a trend is assumed.

As to another question, I do not know exactly the breakdown because it is not given in the publication and I do not know what these invisible receipts are. They are in the case of India more than 100 million pounds a year, more or less stable. The figures do not state whether payments of Pakistan to India are included, then Pakistan might have much higher invisible payments. There is no breakdown to explain that. Similarly, I cannot explain the invisible income for Malaya, which is the very high figure of £40 m. m. It may be that part of this money is for the maintenance of the military establishments there. I should advise anyone who is particularly interested, to consult the publications of the International Monetary Fund. The balance of payments of nearly all countries are published by the International Monetary Fund and there you find a breakdown of the balance of payments of almost all these countries.

One important conclusion can be reached, viz, that a larger development programme will induce more imports and a larger deficit on the balance of payments. One yardstick to gauge this deficit is the import of products for development. The document gives some of these data on the imports of development commodities, but they relate to the year 1950-51, and of course they may have been slightly different in 1949-50.

The next table compares these data for 1950-51.

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Country	Imports	Develop- mental commodities	% Develop- mental commodities	Deficit in balance of payments
India	501	142	28	104
Pakistan	166	43	26	25
Ceylon	85	10	12	+8*
Malaya	202	26	9	3

*Surplus

In the publication developmental commodities are metal, cement and machinery and goods that surely have to be transformed before they can be consumed. Now as compared to total imports, you see that India and Pakistan have a higher percentage than Ceylon and Malaya. The calculation we have made now makes it possible for us to avoid the other pitfall in which the people who have made the Colombo Plan have gone in, because they have not considered the incidence of local production and local labour on the imports. A lot of the imports in Malaya and Ceylon are absolutely necessary for domestic production, so you have to include here a large percentage again for the subsistence of the labourers in the mines, estates and factories.

So the fact that India and Pakistan have a higher percentage of developmental goods does not mean that Ceylon and Malaya have a lower development programme in their country. India and Pakistan come much more in the category of big countries which as a rule have a smaller proportion between their national income and their external trade. The difference between the countries comes out excellently in these figures. On the other hand, the deficit in the balance of payments is not justified just by these imports. Quite a large proportion of the so-called "development goods" may have been used for domestic consumption and need not result in "development" viz, a higher production and higher standard of living in the future.

OBJECTIVES OF THE DEVELOPMENT PLAN

Table on page 407 constitutes first of all for each of the countries the percentage of the programme that is allocated to different subjects—agriculture, transportation, fuel-power and so on. I have done that purposely on percentage and not on the actual figures because otherwise again the big countries will overshadow the smaller countries. But at the bottom I have given the total in millions of pounds sterling for countries and fields of activity. The programme for all the countries together comes in 6 years to £1,868 million. In the programme as a whole one-third has been allocated

to agriculture, one third to transportation and one third to other fields. You see that India, Pakistan and Ceylon also, all three devote about one third of their programme to agriculture. In all these cases agriculture has got a bit more, or may be much more in the figure than in reality, because the multi-purpose river basin development projects, which are very large projects especially in India, are all included under agriculture. It seems to have been too difficult or impossible to segregate the expenses on the integrated programme into a breakdown, what would come for navigation and flood control and agriculture and power in these projects. And after hearing Dr. Sain you will agree that it will be very difficult to allocate that. The figure in Malaya and N. Borneo is lower, and Singapore has only 1. Of course Singapore is just a big town on an island and only 1% there is needed for agriculture. In the Malayan Federation it is 24 and in Borneo it is 13.

You see more difference in the transportation figures, and there India has a very high figure—38%, out of which 26 is for railways. Now this perhaps can be explained, not from the fact that railways are really the first necessity for India but because a large percentage of the total programme is financed from the railway surpluses and the railway depreciation funds (£250 m m out of a programme of £ 1379). So largely the railways will be self financing. The other countries have a smaller amount for transportation. The only thing which might seem rather high is the 12½% in Ceylon on ports. But the airport and the harbour of Colombo are included in that figure.

As to fuel and power, Pakistan has a high percentage, much higher than India, but that is a bit deceptive, because the Karnafuh project, i.e., the flood control and hydro-electric together is put under hydro-electric power and not under agriculture. And some of the schemes in India for hydro-electric power and irrigation and flood control are put under agriculture. But this figure shows that fuel and power for Pakistan is very important in its development programme and that India has put raising food consumption as one of the major objectives of its programme. A scientific or accounting breakdown of the figures might give slight differences, but the figures given in the document coincide with the basic necessity of the country. More emphasis is given to agriculture in India and more emphasis is given to power in Pakistan. Fuel and power are very important also in Malaya and Singapore and there also the servicing of the country with electric power plays a very important part in the development programme.

Industry and mining are important in Pakistan and India and are absent in Malaya and N. Borneo. This does not mean that these territories do consider industry and mining less important than other activities. The tin industry in Malaya and the oil in Borneo have been excluded, because they are completely financed by private capital and are not considered in the programme itself.

In Pakistan another breakdown of the figures has been followed and part of private industry that the Pakistan government considers as a vital development for the country is in the programme, although it will be financed from private sources. In Ceylon and in India, that part of private industrial

finance is outside the plan. So here again the difference between the figures does not show that industry and mining are considered less important in Ceylon and India.

We do not know that from this breakdown because one programme includes one part of the proposed activities and another country does not do it. I have tried to put it down on a strictly comparable basis but I have not succeeded. So we see clearly that if a number of governments in a certain region set up a common plan, it is advisable to agree on the basic assumptions that will be included in the programme. But I have tried to approach it from the financial side and you will see that the estimated investments in the private sector outside the programme in India are about half as big as the whole programme itself. In Pakistan also a certain part of the private investment programme remained outside the programme, viz., those industries which are not considered vital for the country but left to private initiative and private financing. But that part in Pakistan is much smaller than the public part of the programme. So if you would add up the private industrial enterprise that the countries plan to develop during the next 6 years then India, not only in the total figures but also percent wise, has the largest figure of all and here it shows not at all a very high figure for industry. So never take figures like this at their face value, try to look behind the figures and try to discover what are the basic assumptions in the programme. You will arrive at strange conclusions if you do not go into the foundations of statements like this.

A very interesting and important part of the programme is "*Social Services*". There are few overall development programmes—so called economic development programmes that devote such a large part to social services. Here the figure is lowest in Pakistan. It is the highest in Malaya and in Borneo. In Singapore it is 67%, for health 13, education 11, housing 20 and others 23%. This last item seems largely to be public buildings. At least for Sarawak and N. Borneo, the high figure is explained by the fact that almost all the public buildings have been destroyed during the war with Japan and have not yet been rebuilt. So I suppose that the "others 23%" in Singapore also constitutes extension of a number of public buildings. This large amount, that is £330 million for social services, in my opinion is one of the major innovations of this programme, and the fact that the governments have endeavoured to spend such a large percentage, just about 18%, 1/6th of the whole development programme, for social services really is a thing that is worth mentioning.

We have in this training course calculated the costs and benefits of agricultural and allied projects and have considered in theory the necessity of having adequate social services in so far as they can support the economic development programme and in so far as they increase the potentiality of the country. Here we see this principle brought into practice and to a rather large percentage of the total programme.

Now a fairly large part of the total programme is asked to be financed from foreign resources, and the foreign debt services that surely have to come after the development programme will be a burden on the future generation is rather large. A part of the programme can be paid out of accumulated frozen sterling assets that still are available in India, Pakistan and

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Ceylon for the development in the next 6 years. So the use of those sterling balances does not create in itself a burden on the balance of payments in the future. But the other money that is supposed to be borrowed from government to government or from private investors, by floating bonds or by loans from the International Bank have to be paid back and an interest has to be paid on those loans. So it surely is something very noteworthy to see what large percentage of the total investments have been devoted to social services in this whole plan.

DEVELOPMENT PROGRAMMES, 1951-57

Economic Resources	India	Pakistan	Ceylon	Malaya	Singapore	Sarawak	North Borneo
(IN PERCENTAGE OF INDIVIDUAL PROGRAMMES)							
Agriculture	33	32	37	24	1	13	14
Transport—							
Railways	26	6	2	24	13	34	32
Roads	6	4	7½				
Ports	½	5	12½				
Others	5½	3					
Fuel and Power	3	18	8	22	19	2	
Industry and Mining	10	19	6	1			
Social Services—							
Education	6½	4	13	9	11	51	54
Health	3	1½	10	44	13		
Housing	1	1½	4	6	20		
Others	5½	4		10	23		
Total percentage	100%	100%	100%	100%	100%	100%	100%
Totals in million £	1,379	280	102	45	53	4	5

Fields of activities	Total cost in million £	In percentage of total programme
Agriculture	595	= 32%
Transport ..	627	= 34%
Fuel and power	122	= 6 %
Industry and Mining ..	194	= 10%
Social Services	330	= 18%
	1,868	= 100%

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BASIC ASSUMPTIONS OF THE PLAN AND FINANCIAL CHARACTER

In analysing the plan for the financing of the plan for the countries, there is one thing that is very important and that is the basic assumption of the people putting up the plan which in this case were the financial limitations or financial framework. They will not have established a real integrated economic programme, that by chance for Ceylon came to 60 million pounds and for Pakistan at 1,200 million rupees. These figures cannot be the result of making a plan where about 200 or 250 detailed plans have been added up. It is very clear that the Colombo Plan has started with the financial nucleus, that it has been said that over 6 years, Pakistan could start within a framework of 200 millions rupees a year, to come from abroad and that Ceylon could spend 10 million pounds. In other currencies these figures would not be just round figures. So by this way to analyse the programme you go more or less into the kitchen of the people who have cooked this up and you see what their basic assumptions were. The basic assumptions were not the composition of a plan covering all parts of economic life and set up by a large group of economic planners. The plan has been made by a group of financial planners and the economic planners after that have been asked "If you get that amount of money, what would be the best way of using it?"

It is at this point that the members of this training centre, some from the financial side, some from the economic and some from the technical side, have to fit together to get a balanced programme. Many items in the normal development programmes of a country it will be the technicians who come out with ideas about something that should be done. And then the economists come and assess the plan and then at last the financial people come and veto it or agree, but in this case it has been the financial people who have considered what would be reasonable—financially possible in the development of these countries.

DOMESTIC AND FOREIGN FINANCING

In Table C figures are given about the proposed financing. Here you find rather different figures for the division between domestic resources and external finance considered needed in different countries. In India, 44% is considered needed and in Ceylon under our new figures it would be about 60%, and in Malaya also it is 56%. In Pakistan it is 46%. Now we find another figure and that is the total domestic investments that are considered possible in the country, including the private investment outside the programme. I told you about the industrial programme of India—how large that was in proportion to the total and how large it was in proportion to other countries. You find that in the first part of our table as 720 for India and 50 for Pakistan. For Ceylon and Malaya the figures are not given, and the tea, rubber and coconut plantations and the tin mines, oil fields in Borneo are absolutely excluded from this whole programme. But the total domestic investments which are considered possible in these

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four regions are given. In the case of India 772 plus the 720 private investment outside the programme. So there you come at about $1\frac{1}{2}$ billion pounds sterling for India and 200 million for Pakistan. The figure for Ceylon is 70.

Then I have put under those figures for our programme the cost of capital goods to be imported. They are given in the book as 237 for India and 20 for Malaya and N Borneo. Then I have calculated the incidence of the larger domestic production for the programme on imports. And those are the figures that are given as 80 for India and 49 for Malaya. Here you see in these figures how important it is to calculate that secondary incidence on imports. On a programme of 772 million pounds sterling in India, you find only 80, and on a much smaller programme of Malaya you find about 50. Now if in the financing of a programme you would only take into account the figures of 237, 115, 39 and 20, especially for Ceylon and Malaya you would provide for only about half or less than half of the foreign products that are needed to carry out the programme without inflation.

Now what are the total import requirements of the development programme—317 million for India, 131 for Pakistan, 67 for Ceylon and 69 for Malaya. If we deduct that from the total, then we get the expenditure for pure domestic goods and services. I have put in the word pure because I have deducted from the domestic resources and domestic services the incidence on import of this production. There you find again a range of figures 1062, 149, 35 and 38. And then we find the domestic resources considered available. Now the domestic resources for Pakistan are assessed at 151 and the need at 149, Ceylon has 42 and the need is 35, in Malaya 46 and the need is 38. So these countries assessed the secondary impact on their imports for domestic production very well. They come out in the same way as we would have calculated it here. The only case where it is different is the case of India and there 290 million pounds sterling asked for foreign financing for pure domestic production and that figure would need further clarification and explanation, before we could get definite answer as to what that does mean for the economy of the country. The most obvious conclusions, which is given only in veiled words in the report, is that this money cannot be borrowed, but that grants have to come in and that the "counterpart" of such funds would be used for the development programmes, in a way similar to the Marshall Plan for Europe.

TABLE C
DOMESTIC AND FOREIGN FINANCING

	India	Pakistan	Ceylon	Malaya and N Borneo
Total cost of development programme in 1951-57	1,379	280	102	107
Private investment outside programme	720	50	7*	7†
Total proposed investments in period	2,100	330	±110	±120

*Excluding tea, rubber, coconut

†Excluding estates and tin mines.

contd.

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TABLE C—concl.
DOMESTIC AND FOREIGN FINANCING—concl.

	India	Pakistan	Ceylon	Malaya and N Borneo
Domestic resources for development programmes	772	151	42	46
External finance considered needed	607	129	60	61
Total development programme	1,379	280	102	107
Total domestic investments	1,492	201	± 70	± 60
Cost of capital goods to be imported	237	115	30	20
Incidence of larger domestic production for programme on imports	80	16	28	49
Total import requirements of development programmes	317	131	67	69
Expenditure for pure domestic goods and services (total programme minus total import requirements)	1,062	149	35	38
Domestic resources	772	151	42	46
External financing of domestic production considered needed	290	—2	—7	—8

COMPARISON OF METHODS FOR RAISING DOMESTIC FINANCIAL RESOURCES

I tried to assemble from tid and bits of notes in the publication the different ways which the respective governments envisage to raise the necessary domestic savings

A INDIA

<i>Public sector</i>	..	over 1951—1957	Rs
Surplus of state-owned enterprises (mainly railways)			1,800
Railway depreciation fund			1,200
Current revenues of Central and State Governments			4,900
Net borrowings from public			2,400
	Total	.	10,300

Current revenue includes present expenditure on development *and also Rs 1,100 economies in public expenditure

Private sector over 1951—1957 in total
Rs. 11,575 m m (increasing from 1,600 to 2,600)

*Stated elsewhere to amount to Rs 2,250 per year, which figure indicates that all sources of finance are included in the figure of Rs. 2,250 million per year

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The sources of savings for this investment will be the reserves of companies and private savings

B PAKISTAN

Public sector . . . over 1951—1957

The contribution from private savings can be deducted from statements regarding other sectors, viz , $1200-400-450=350$.

From public revenue, through some economies and increase in existing taxes Rs 500 m.m

The government therefore will have available Rs. 850 m m for the public sector.

Semi private sector

Private investment in development programme (cotton, jute, paper and other enterprises) is estimated at Rs 400 m.m.

Private sector

Total private savings are estimated at Rs 200 m m. annually, or Rs 1,200 m m in total, out of which Rs 450 m m will be investment outside the programme

An interesting comparison between India and Pakistan is the difference in private financial resources In India nearly Rs 12,000 m. m is earmarked for private industry and Rs 2,400 m m for public sector Out of the total of Rs 14 4 billion, 83% is for the private sector In Pakistan private savings are estimated at Rs 1,200 m m , out of which 350 m. m. is earmarked for public works, 400 m m for semi-private industry and 450 m m outside the programme A percentage of 70% only is for private industry

C. CEYLON

Public sector

Internal loans are envisaged to an amount of Rs 450 m m. average of Rs 75 m m , as compared with Rs 46 m m in 1948-49, Rs 30 m m in 1948-49 and Rs 30 m m in 1949-50

Planned budgetary surpluses . Rs 360 m m.

Total domestic financing Rs 810 m m.

Annual domestic financing will be Rs 135 m m. as compared with Rs 116 m m. on the average over the years 1947-48 to 1950-51

The additional effort of Ceylon is Rs 19 m m yearly

Private sector

Has been excluded from the considerations

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D BRITISH TERRITORIES

It is difficult to raise government loans locally. When the Federal Government of Malaya tried to raise £12 m m locally in 1947-48, only £8 m m was obtained, of which £6 m m come from Banks. The total deposits of the savings banks are only about £8 m m.

Steps are being taken to increase the yield from income-tax.

Private sector

Estates and small holdings, mines, manufacturing industries and commerce, are excluded from the considerations.

RECONSTRUCTION OF SOME BASIC FINANCIAL FIGURES IN THE COLOMBO PLAN

The White Paper does not give all the details of the Colombo Plan, and in quite a number of cases many important figures are missing. As I have told you, I am convinced that the planners had a financial ceiling more than a lack of plans. I tried to reconstruct some of these figures and put them *in italics* in the next table about India and Pakistan. For Ceylon and Malaya it seems futile to divide the programme and its consequences over the six years of the planned period.

(Millions of rupees)

India	1950-51	1951-52	1952-53	1953-54	1954-55	1955-56	1956-57
Planned investment in public sector	2,250	3,070	3,070	3,070	3,070	3,070	3,070
Estimated in private sector.	1,600	1,600	1,750	1,900	2,050	2,250	2,600
Total investment	3,850	4,670	4,820	4,970	5,120	5,320	5,670
Import of capital goods for public sector	380	560	560	560	560	560	560
Import of capital goods for domestic private investment	480	480	525	570	615	675	780
Incidence of programme on consumers imports	180	250	250	250	250	250	250
Total imports needed for Colombo Plan	560	810	810	810	810	810	810
Total need of imported capital goods for investment	860	1,040	1,085	1,130	1,175	1,235	1,340

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(Millions of rupees)

India	1950-51	1951-52	1952-53	1953-54	1954-55	1955-56	1956-57
Available internal resources for programme	1,320	1,360	1,475	1,590	1,750	2,000	2,000
For domestic private investment	1,130	1,130	1,300	1,470	1,650	1,850	2,270
Total domestic resources	2,450	2,490	2,775	3,060	3,400	3,850	4,360
National income (billions)	96	97	98	99	100	101	103
Domestic resources in % of net income	2.5	2.5	2.8	3.1	3.4	3.8	4.2
External resources sought	930	1,710	1,600	1,480	1,270	1,070	980
Out of which £ balances		470	470	470	470	470	470
Foreign investments and loans sought	()	1,240	1,130	1,010	800	600	510
Increase in domestic resources needed if pure domestic activities financed domestically	370	900	790	670	460	260	170
ibid in % of net income		0.90	0.80	0.7	0.45	0.25	0.16
Foreign investment needed in case domestic savings are stepped up	()	340	340	340	340	340	340
Imports of "development goods"	1,900	2,100	2,200	2,300	2,400	2,500	2,600
ibid in behalf of programme and domestic industry	860	1,040	1,085	1,130	1,175	1,235	1,340
Pakistan	1951-52	1952-53	1953-54	1954-55	1955-56	1956-57	Total
Planned investment estimate	335	480	480	435	435	435	2,600
Private sector outside programme	75	75	75	75	75	75	450
Total investment	410	555	555	510	510	510	3,150

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Pakistan	1951-52	1952-53	1953-54	1954-55	1955-56	1956-57	Total
Import of capital goods for plan	145	190	190	175	175	175	1,050
ibid for private investment	25	25	25	25	25	25	150
Incidence of programme on consumers imports	15	30	30	25	25	25	150
Total imports needed for Colombo Plan	160	220	220	200	200	200	1,200
Pure domestic expenses	175	260	260	235	235	235	1,400
Total need of imported capital goods for investment	170	215	215	200	200	200	1,200
Domestic resources	145	175	195	215	245	275	1,250
Foreign finance sought	190	305	285	225	190	160	1,350
Financed by £ balance	90	15	15	10	10	10	150
Loans and investments sought	100	290	270	210	180	150	1,200
To be financed temporarily	-30	85	65	-20	-10	-40	150

Ceylon	For whole period	Yearly
Total programme	Rs 1,359 (£ 102)	£ 17
Available internal resources	587 (£ 42)	£ 7
Imports of capital goods for programme	720 (£ 39)	£ 6 5
Incidence of programme on consumers imports	373 (£ 28)	
Total need for imports	893 (£ 67)	
External resources sought	802 (£ 60)	£ 10
Out of which £ balances	253 (£ 19)	£ 5 & 2 8
From other sources	549 (£ 41)	£ 11 & 6
Financed from balance of payments surplus	91 (£ 7)	

The last column reveals the basic data, programme (17)=10+7, £ 60 external resources are divided in £ 16 plus 5 times £ 8 8

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British Territories	For whole period		Amounts in (M) \$		
	Federation	Singapore	N. Borneo	Sarawak	Total
Total public programme*	384	452	45	39	920
Internal finance available	75	302	9	9	395
External finance sought	309	150	36	30	525†
Cost of capital goods imported for programme	44	45	4	3	96
Incidence of plan on consumers imports	(180)	(245)	(12)	(13)	(450)
Total need for imports	224	290	16	16	546
Paid out of balance of payments surplus		140			140
Financing of domestic production sought.	85		20	13	119

*Private industries excluded in all territories

†First year, £9 (M \$77), later years, £10 4 average (M \$90).

PART VI
PREPARING THE FINAL PROSPECTUS
AND PROPOSAL FOR A DEVELOPMENT
PROJECT

BY
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PREPARING THE FINAL PROSPECTUS AND PROPOSAL FOR A DEVELOPMENT PROJECT

Introduction

This course will cover first a discussion of the form the prospectus or statement of a development project should take and what items it should cover, and then later on, the way the work to plan such a project and to prepare such a report might be organized and scheduled. A suggested outline for such a statement is given at the end of this series of lectures.

CONTENTS OF A PROJECT STATEMENT

It will be useful to review first the elements which should be covered in the statement or prospectus of a development project. There are 8 major sections in the proposed outline :

First, a review of the resources available and what development is proposed to be made of them. Second, a statement of the engineering and physical aspects of the whole development. This includes what construction is involved, what engineering work is involved, if any, together with blue prints and estimates of the cost and a time-table of development and costs. Third, a technical appraisal, including the agricultural aspects and the industrial aspects, of what can be produced as a result of the development. This should include the problems involved in utilizing those resources, and a time table of how rapidly the project can be brought to full production. Fourth, a statement of the proposed administrative arrangements for the development project. Fifth, the proposed arrangements for financing the development. Sixth, the question of the relation of the project to the national economy and to national development programmes. Seventh, the appraisal of the prospective costs and the prospective benefits, including both direct and indirect benefits, both overall for the life of the project, and step by step by time periods of the development. Finally, eighth, a summary statement of all aspects of the project, brought together for administrative and financial consideration.

Any outline can be prepared in many different ways. Some of these items could be lumped together and some of these could be separated into parts. But I believe this covers all of the phases and aspects of the project, which we have discussed from time to time during our Training Centre, and provides a reasonably logical way of presenting them for consideration by others who do not know about them. Further, it is essential in planning a project, to know that all these necessary aspects have been covered.

Let us go back now and see more in detail what each of these 8 points involves.

1.—Review of the resources available and their proposed development : That will mean showing the project involved in an area or region, with a map of the region showing where the project is proposed to be located, what the resources are with which the project is to deal. For an agricultural

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project — these would include soils and rainfall, for a mineral project, the geology and the mineral resources, for a hydro-electric project, the water for power development — the physical factors and the geology. So the first statement is explaining what the project is and giving the basic outlines of it and the underlying technical facts on which it is based.

II A more detailed statement of the **engineering and physical aspects**. This would cover what is proposed to be done, together with blue prints of the proposed construction, detailed discussion of why construction is as it is for irrigation, how much water there will be as water reserve, for flood control, what the facts are on floods and control measures proposed, and so on. Then an estimate is needed of the engineering and other construction costs, both overall and broken down, either year by year or by other time periods, during the period of construction.

III - Technical appraisal of productivity : Technical appraisal of productivity and income from what is known of technical information on the subject, of how much carrying through the project will add to the physical output of the region. In the case of the Thal Project this would include the estimate of how much land will be brought in, how fertile that land will be, what are the crops to be grown on it, and the problems involved in utilizing it. It should also include an analysis of how the farms should be organized and of how rapidly the proposed development can be carried through, both as to the water and as to the farming, and of the markets for the products to be produced, whether agricultural or industrial.

IV. Proposed administrative arrangements The section on proposed administrative arrangements should show who is going to have the responsibility for planning, for construction, and for operating the facilities after they are completed. It should also show how responsibility and power, both administrative and financial would be divided between any special authority, if there is to be one, and the local, provincial and national authorities involved, what the legal basis is for the way in which it is going to be conducted, and what the financial relations will be between the several authorities involved and between the individual farmers or businessmen and the local authorities. This would lay the basis for estimating the benefits of the project to the national economy.

V — Financing the Project The plan for financing the development should show how it is proposed that the development be financed. How much would come from the development authority, the province, and how much from the Central Government. It would also show how much will be raised internally and how much will be raised externally and at what rate it will be repaid.

VI. The statement on relation to the national economy and the national development programme involves (i) a consideration of how the particular project fits into the economic plans and programmes of the country, and also a consideration of what the returns of the project may be to the country as a whole. This lays the basis for the appraisal of the indirect and intangible benefits of the project, in the same way that the technical appraisal lay the basis for appraising the direct benefits.

VII.—Costs and benefits of the project : The statement on costs and benefits of the project should summarize all, both direct and indirect. Here, assumed prices and assumed costs must be used in calculating what the value of the returns will be from farm production, or from electric generation or any other industrial production

VIII.—Summary The summary integrates all these aspects, summarizing them in very brief space for consideration by administrative officials and by financial agencies who are considering whether they can provide the funds necessary

In presenting the project, the summary statement should be on top and all these other statement will be exhibits. What we examined for the Thal Project was only the summary statement—most of the other material was not there

The 8-point outline stated here differs from the proposed outline for this course as stated in the curriculum prepared for the Centre in October. That had only had 5 points and now we have 8. This reflects the way in which all of us are learning from our discussions. Also, it should be noted that there is much over lap and inter-relation between different sections. You cannot really work out the plans for financing the development until you appraise the costs and the returns. On the other hand, you cannot appraise all the costs and the returns until you know what interest rate the money will cost. You can't set up a schedule of repayments until you know how rapidly returns may come in, and how much each farmer will be able to pay. Actually you don't plan a project in the same order as you present its several phases. You have to have different groups of people working on different phases, pretty much at the same time. But you have each group cross-checking with all the other ones, in preparing preliminary and then revised plans. Then after you get the revision of one part, you must go back and correct the other parts. What is really involved is a set of successive approximations by trial and error, fitting the different parts intogether. The different phases have to be done by different sets of experts working on different parts, but keeping in contact with one another to make sure that all are operating on the same assumptions and that what they have done will fit together as part of the same project when they get finished. For example in the Thal Valley — the Public Works Department, the Irrigation Department and the Thal Development Authority, each independently are carrying out various parts of the development, but in close collaboration with one another. They must make sure that the Public Works people put their roads with reference to where the Thal people are planning to have their market town so that the market towns are located with respect to the roads and the roads with respect to the market towns. You have to provide for effective collaboration to make sure the plans fit together.

The order of report presentation is suggested more from the point of view of somebody on the outside, wanting to know what it is all about, than from the point of view of somebody inside planning the actual work. The object is to have a document which when put before some one who has to take action on it, should answer all the questions they would want to raise. We want to write a report so that some one can read it through and see

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that it is all laid out logically and that all the parts fit together. There are many other outlines which could be developed but this is directly from one point of view — the point of view of the reader

PROBLEM OF PRESENTATION

We have been considering to this point an outline of the contents. The next question is how do we write it out, how should we present the material?

Consider audience to whom addressed

The first thing to decide is, who are you writing it for? If I were writing a letter home to my 7 year old daughter, for example, I would write it in quite a different way, and talk about quite different things, than I would if I were writing to an adult, because they have different interests and different vocabulary. Similarly when you prepare a report, you need to write it directed to the particular audience whom you expect to read it. That is true not only for a report but technical articles and popular magazine articles and anything you write. Unless you have a pretty good idea of the audience who is going to read it, you can't do a good job of writing. When you write a professional article for your fellow technicians, you use technical terms and you write very technically and they can understand what you are talking about. But if you are explaining that same thing to a lay audience, or are making a popular lecture to non-technical people, you need to present it quite differently to explain the ideas, and operations in just as simple language as you can. One of the great faults in professional people trying to explain to others, including trying to explain to farmers, what they have found and what it means, is to recognize that the farmers don't know the technical terms or the technical context in which you are working. Probably quite frequently in giving these lectures here we have been guilty of talking in technical terms which we did not fully explain to you. I repeat here a statement by an eminent educationist. He says "The teacher has not taught until the student has learned." You have not done a good job of teaching if you give a lecture which your students cannot understand. Similarly, you have not done a good job of report writing, unless the report is so written that it will be understood by the people to whom it is going to go. If they are confused by it, if they can't follow your explanations, if they don't understand, then it is not a good report.

If further your reports are going to be considered by institutions outside your country, whether you are writing in English or in French or in German, you should use only those terms which can be found in a good English, French or German dictionary. For example, those of us who were not brought up in this part of the world had great difficulty in understanding and still don't understand thoroughly many of the terms that we found in the English version of reports that were presented here. "Rabi, lac, doab", you can't find any of those in an English dictionary. These are only a few illustrations. For units of measure, such as maunds or seers, you

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can always make conversions. But when it comes to other terms, you need to go through your reports pretty carefully and make sure that you have translated them correctly, if you want them to be read by outsiders.

There are two audiences for a report of this type. The first audience is the public administrator in your own country, the people who have the responsibility of deciding what to do about this and other projects. They are the ones who have to consider whether the prospective cost-benefit ratio or national benefit from the project you are working out, compared with those of other projects, are such as to justify going ahead with it and in what order of priority. Many problems that have been discussed in some of these lectures, particularly Dr. Singer's are not considered in a project statement, because they are somebody else's business. Before you can consider the question whether one project is better than some other project, you have to have at least preliminary reports on both projects. The whole concept of this training centre is how do you prepare an effective report on a single project. Well public administrators of that sort are one audience.

But it is not only administrators or members of a national planning board, it may also be legislators who finally must approve the appropriations — at least in any country where legislatures have real authority. Members of the legislative body are likely to want to know about it so as to judge whether the appropriation should be made for this project or for some other purpose or project. You may know when you prepare a particular report, whether it is primarily for a public administrator or primarily for the legislature, but at least in countries like the U.K. and the U.S. and I believe also in Turkey, any project prepared for an administrator is also likely to be put before the legislature. So in view of that you should write your report in such clear style and language that the members of the legislative body can understand it, as well as the administrator. Almost all the things that involve any close reasoning or any highly technical or scientific appraisal, will need to be stated in pretty simple and clear terms. A second type of audience is any institution outside your country to whom the project may be submitted for consideration or for financing, such as the International Bank. While such an institution will no doubt have experts and economists to examine the technical sections of the report, it will also have general administrators who will consider the overall aspects of the proposal. They will want to find the summaries and general explanations clearly and understandably stated, and well supported by adequate and competent technical statements in the various exhibits.

Use of graphic materials

Engineers, can hardly outline or describe a project without bringing in maps and making blue-prints in order to develop a mental picture of where it is and what it is that is involved. Statisticians can hardly deal effectively with their figures or even see what their data show, without preparing a certain amount of graphic material, time series charts, frequency diagrams, etc. Tabular presentation—tables and accounts—are also needed. Thus after you have the best data you can get on the project, the next thing is

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to try to devise charts, graphs and maps which will help the reader to see readily what it is you are doing and understand what the meaning is. And photographs help also. Any kind of a report gains significance from photographs, which help to give the reader a first hand knowledge of what things look like.

Meeting specific requirements

This is a question of meeting the requirements for information of the agency to which the report is going to be submitted. Many financial institutions have a questionnaire which they send out to be filled out by applicants for loans. You want to be certain, if you want your project to be put up to a given financial institution, that it provides all the items necessary for answering the questions which that institution asks. If it were decided after national administrative consideration, that your project was approved and was going to be sent forward for a bank loan, then you or someone else could very rapidly take out from the report all the items which needed to be covered in the questionnaire pertaining to the project.

Finally, the summary of all aspects would really be put on top of the document when you get finished. It is the general summing up of all aspects of the project. It would refer to the supporting exhibits, at different places. Each Chapter from I to VII would be one exhibit, which would go along with the project statement, giving the detailed plans and considerations from which the summary statement has been derived. The exhibits on the various aspects of the project would really themselves be summaries of more detailed explanations. Exhibits, for example, "II" would be a summary of the engineering side and then will be attached to that exhibit supporting sub-exhibits, "II 1" and "II 2", etc., which would give further details on various points to support its conclusions. This would provide a means to assemble and organize the details in such a way that they can be readily comprehended, and to give the conclusions in sufficient detail so that they will be convincing or understandable, yet at the same time give satisfactory brief overall views, both of the whole project and of its major aspects.

You remember what Dr. Khambhu said about having all the hydrological records and analysis for an irrigation project, if you had them, the appraisers were satisfied and would not look at them, if you did not have them, well then you had to go back and get them. I have had somewhat the same experience in U. S. Government work — you will work up a big programme, let us say that the final typed document is 2" thick. For consideration by the Bureau Chief you put a 20 page summary on top outlining the things that are in the programme, and the arguments for it. If it is going up to the Secretary of the Department (corresponding to your Minister), for consideration, you would prepare a two or three page summary of the summary for the Secretary to read. But if he decides to send it to the White House for the President, we would put an half page summary on top of that, summarizing in very brief terms what the 3 pages summary said and what the 20-page summary said. The decision may often be made

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on that top summary. Anyone in that position making hundreds of such decisions a week, generally has to determine his decisions on the basis of such a very brief summary. The fact that the big thick document is below is a thing that makes the administrative head willing to take the action, for he knows that the summary rests on careful technical study, and can examine the supporting documents to throw light on any point he may find of interest or question

I Resources Available and their Development Proposed

LOCATION AND CHARACTER OF THE PROPOSED PROJECT

Have a map of the country, to show where the project is located in the country as a whole, and also a more detailed map of the project itself or of the region in which the project is to be located.

A note on the method of working out any development project. You start out with a general idea of what you have in mind and you consider in a very preliminary way. You make a preliminary reconnaissance or general survey of the whole thing, of what you think can be done, of what it might cost you. This would include a very rough outline of what the benefits might be of all the elements involved and how to get it done, but in a very hurried superficial way. This would give a first basis for judging whether the thing is worth looking into in more detail. For example with somebody thinking of building a house, you don't sign a contract with the architect or the contractor until you have some general idea of what it is going to cost and whether you can afford it. You go to the architect and say I have been thinking of building a house, say with about 6 rooms and 2 bathrooms on 2 floors, possibly a square sort of house. Now about what would it cost to build such a house? He will ask you two or three questions and in 4 or 5 minutes he will make some rough calculations and from his general knowledge and experience he will say well if you don't want too many frills we could do it for \$15,000 or \$17,000. Then you would look around and see what the land would cost. After you have a rough estimate of the total cost—may be \$20,000 including the land—then you might go to a banker or a mortgage company and discuss a loan to help build it—how much you can afford to pay down, and estimate how much you have to pay back each month. Then you compare what you would save in rent with what it would cost you each month if you build the house—your preliminary estimate of 'costs and benefits'. You may decide it is too costly, and you plan a smaller house instead—say 4 rooms and 1 bathroom. If you decide on the basis of this brief survey it looks like a practical idea and one that you can afford, then you go ahead and make a more thorough study of it. You get the architect to draw up a detailed blue-print, get a contractor to make a detailed estimate or bid on the costs, and negotiate for the mortgage or other financing. Then when you finally start construction, you will still find a million things that nobody has thought about before, all kinds of little details, that even the architect had not laid out ahead. It is amazing that in building a

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house how many ideas each workman doing the job has on something that did not show in the plan. This is a very small illustration of the stages in a specific project. So you really have 3 stages at least or preparing any concrete projects

- (1) The preliminary reconnaissance to see whether it is worth considering.
- (2) Preparation of specific plan and blue-prints.
- (3) The detailed activities in building the structures or of actually working out the operation.

In the same way here, in a project report, you start with discussing what you are talking about in this area putting in an irrigation project, for example—just giving a general idea of what is involved. After you review the relevant physical details and show whether or not the general idea is feasible, then you give a more detailed outline of the proposed development. It is still not a detailed engineering plan with detailed costs, that comes in later. Then the second phase is really getting down to brass tacks, to the practical details. Here in Chapter II we start getting down to the real details of just what conditions are in the region.

RELEVANT PHYSICAL AND NATURAL RESOURCES

For an agricultural development project, we have to know about the soils and their fertility, about the rainfall and climate. If it is a water control project, whether it is a drainage project, an irrigation project, a hydro-electric project or a flood control project or any combination of these, you also need to present specific facts as to the hydrology. For designing irrigation works you need to present what the water supplies are, what the rainfall is, and its distribution through the season. Equally important are not only what the average rainfall is, but the variations in rainfall between years and through the seasons. For irrigation or flood control, you need the supply of water, other than rainfall, the flow of rivers, the high and the low water levels and the seasonal distribution. How much of that water flow is available for the use of that project? What are the underground waters? It is important to study the level of the underground waters and if possible to do some test pumping, to determine the dependability and volume of the ground supply. One alternative may be whether to put in a dam and canal or whether to irrigate by pumping from wells. For floods control you need to show what will be the high waters, how often they are likely to come, how much damage they have done, and how much of the area is likely to overflow and therefore cannot be considered. Drainage problems must be considered, whether if you put water on the soil you will need to provide drainage of some sort. For all these details especially for water control projects, to a less extent for agricultural projects you need a careful map of the region—a map which shows not only the lay out—as far as roads and other features go, but detailed topography for the actual detailed planning of irrigation canals, distributaries, and waterways. A map of soil types will also be helpful. Under climate you need to present maximum and minimum temperatures through the season, the relative dates of earliest and latest frosts, the usual hours of sunshine and the varia-

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tion from year to year in each of these All of these are very important for judging agricultural feasibility

Next come flora and fauna which means describing the natural vegetation and the animal life The natural vegetation and the natural animal life occurring within the region, is important, because it shows what lives there now, and may be relevant to in judging what crops can be grown after irrigation has been applied, in unexploited regions like the Thal

If we are considering a flood control project or a hydro-electric development project, other aspects would need to be particularly pointed out. What is the minimum discharge available through the year? How much of that discharge can be made available by the works you are contemplating, if you are developing power, or something about the flood problem, relative to the contours and the topography, if you are proposing a flood control project. If you are studying a project which involves an industrial development or a chemical development quite different considerations will come in. A mining project will of course involve considering the mineral deposits available. The accessibility of raw materials is very important for industry. Some industries depend on local agricultural raw materials, as marketing farm products, handling them canning or preserving them, ginning cotton, cleaning, pressing or refining cotton-seed oil or oil from other oil-seeds, and baling wool, or spinning and weaving textiles. All of those involve a certain quantity of raw material, in the region or from the adjacent region. Other industries such as iron and steel depend largely on ready accessibility of the raw material, coal, limestone, ore, plus electric power. The accessibility of the materials, where are they going to come from, the transportation lines to bring them there obviously are things that have to come in, in a statement of what the possibilities of the region are.

RELEVANT SOCIAL FEATURES INVOLVED

This includes the related things that men have already done—what is the present utilization of the area—what kind of farming is being conducted—how many farms there are—what kind of crops they are producing—what the human resources are, what the minerals are, where the mines are, what manufacturing is going on, what marketing facilities exist, etc. Then the population. Population involves not merely the people, but something about their age and sex. In some regions of underdeveloped regions, you may have a great many males, and that may have a bearing in your setting up an industry which needs women operators. In certain operations, in cotton textile production for instance, women have been found to be much more skilful than men. Also, the ability of the labour, the people, to do the kind of work that is needed is very important. Later on you will see in Mr. Clawson's discussion that necessary training facilities are things that have to be taken up. If you are setting up a new factory the existence of small factories or even handicraft operations of the same sort may help, so some experienced people will be available to become foremen and supervisors. Transportation facilities should be explained with an eye to describing what they are and what might need to be done if you do carry through your proposed project, to increase the economic utilization.

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Another group is public services as a whole including schools both primary and secondary and technical training institutions, hospitals and doctors, water supply, communications, power, and of course roads. Under transportation you also will have rail transportation and trunk line and other roads. You may want a more detailed statement of the extent of the transportation available to individual farms, to judge what additional needs to be done to make your project feasible as you use the area more intensively. The accessibility of markets for the products to be produced must be indicated—where possible markets are—how effective the transportation facilities are to get them to those markets, the existence of related industries that might use the products. For example if a mine is already there and you are going to expand forestry, pit props for the mines may be an important product you can sell, with very little transportation cost. All of these things are involved in describing the existing social features with an eye not only to an adequate understanding of the region, but particularly with regard to their relation to the further development you propose.

PRESENT STAGE OF DEVELOPMENT IN THE AREA

This is a review of what has already been done in the area. Has there already been a partial development in the region and are you proposing an expansion of it? Perhaps if there may also be a little statement of how well it works and what kind of problems were encountered. In other words this should show what has been done in that same region, of the same sort you are planning to do—how far has it gone—how well is it working.

EXISTING GOVERNMENTAL AND ADMINISTRATIVE AUTHORITIES IN THE AREA

This should show what are the existing administrative and governmental authorities in the region, exactly what responsibility if any, does the Central Government carry. What responsibility does the Provincial Government carry. What kind of local self-governing institutions are there, if any or all local institutions under the control of the Provincial or Central Government. Finally, is there any special administrative unit, already set up in the region in addition to the usual government agencies. These facts provide the background, for proposing modifications later on if they are needed.

GENERAL OUTLINE OF THE PROPOSED NEW DEVELOPMENT

Against the earlier background you show here in general outline, what it is proposed to do with the land, what it is proposed to do with the water—where it is proposed the major new physical structures be built, dams or canals and mine or manufacturing plants—just a little more specific picture now of what is planned to be done. While other sections later will give the specific technical details, hereafter having painted the picture of *what is* as clearly as you can, you paint a somewhat more detailed picture of *what you hope to make it* in the future. That gives an initial statement of what the resources are in the region and what it is proposed to do with those resources in the proposed development.

II Engineering and Other Physical Aspects of Proposed Development

Chapter I, is a rather brief review. It is intended to summarize the existing conditions in the area together with a brief statement of what is proposed to be done with them. Many books have been written describing each country so you don't want to write another book in writing that first chapter. Rather you will want to pick out of the books that have been written, the facts necessary for somebody from outside the country to know, as the basis for considering the proposed project. That part should not be too detailed or too exhaustive. On the other hand Chapter II, which is the statement on the engineering and other physical aspects of the proposed development, will need to get down to the specific facts of what you are going to do. This chapter will be more technical in nature than the other. You should bring out the essential technical aspects of the project, the engineering principles you would use in designing your irrigation canals, for example. This chapter would need to be written pretty much by engineers using the terms in which engineers think and talk, so that an engineer reading it will see that the job has been properly done. If a national or international authority is reviewing the project it will call in some engineer to explain what it means. The statement should show that the people who write it are aware of the up-to-date methods in the field.

The items to be included in Chapter II, would undoubtedly differ from project to project depending on just what each involves. Some projects might not involve any physical construction at all, and might involve only proposed changes the farmers should make in their practices. In that case the chapter might disappear entirely, or it might be stated entirely differently in terms of the methods of extension necessary to get the farmers to adopt the improved practices, rather than in terms of the physical construction to be carried through. The proposed outline, however, will be discussed in terms of a project, such as the Thal Project, involving some physical construction.

MAPS, PLANS AND BLUE-PRINTS

First would be maps and detailed blue-prints, showing the plans for various features of the construction. Along with those should be a discussion explaining the lay-out in terms that an engineer looking over it might want to know such as to how the strength was figured, how the cross section of the canal was figured, what principles were followed in designing the canal to carry the water flow and handle the silt, and so on.

GENERAL SPECIFICATIONS FOR CONSTRUCTION AND EQUIPMENT

It is not only necessary to show that a certain structure is going to be made out of concrete, but also what mixture and what reinforcement if any, will be used. For the equipment such as tractors, there are many sizes and types and you have to specify very clearly just what is needed. Any one studying your plan later on, to see if your cost estimates are right can't tell

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much about it unless the plan itself indicates clearly just what it is that is to be purchased

RELATION OF THE PROPOSED STRUCTURES AND EQUIPMENT TO THE RESOURCES AVAILABLE AND THE JOB TO BE DONE

If you are designing an irrigation works for example, you want to discuss the proposed volume of water available as shown by the flow and the seasonal variation in the flow, and the maximum and minimum flow, in relation to the volume of water you expect to use. This would also involve seasonal distribution of requirements for water relative to seasonal distribution of supplies, to justify the calculations you have made. Similarly if you were planning a hydro-electric project, one of the first essentials is to relate the volume of water you have, both the maximum and the minimum, which will go through your plant, the number of feet fall (the "head") which it will have, the turbines to be used, and the amount of power to be generated. Similarly a mining or industrial proposal will need to be related to the mineral resources available or the raw materials available. In an industrial plant you will also need to have an explanation of the way the different parts of the plant fit together. You can build a cotton mill with several different proportions between the number of spindles and the number of looms, depending on whether you intend to weave all the thread which you produce, and what kind of fabrics you are going to produce. To explain the combination of equipment you will need to show the proportions of different products you expect to produce. In an agricultural development which involves heavy machinery for land development, the number of tractors of different sizes and weights and the amount of equipment for the different tractors to be purchased should be related to the different kinds of work to be done on the project to show that the combination of the type of tractors and equipment purchased, was properly balanced with the needs.

In discussing the technical plans it is important not only to explain why you are constructing it in the chosen way, but also what some of the alternative plans are and why you did not choose them. Why wasn't the dam put two miles further up the river, or a mile lower down? Why wasn't the canal lined with concrete instead of brick? Why wasn't the road base made out of stone instead of bricks? Why weren't wheel tractors used instead of crawlers? Questions such as these will be asked by outside authorities called in to review your report. If you show, even by a brief discussion, that such alternatives have already been considered and rejected, and why, that will speed up the adoption of your conclusions and proposals.

Also, any special bottlenecks that limit the size or operation of the proposed activity should be clearly indicated and discussed, whether water, labour supply, materials, etc.

PROJECTED SPEED AND TIME SCHEDULE OF CONSTRUCTION

That is quite important. How fast do you propose that different parts of the project will be built and how fast will the different facilities be installed? What is the time schedule for starting the first phase of the pro-

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ject, for completing the second phase, etc. All that should be worked out in rather careful detail, to show that the materials and equipment are not bought long before they are needed, but that their arrival has been planned in time to put them in the place they are needed. You remember when we visited the Rasul Project, its completion had been delayed for more than a year, because one rather small but essential part had not arrived, and all the rest of the project was waiting for it, before construction could be continued.

ESTIMATED COSTS INVOLVED

This should indicate the total estimated cost and the cost for each of the various sections of the project. That should make clear not only what costs are estimated for each different part of the construction, but also the different authorities involved if there is not one single authority responsible for the entire project. In the case of the Thal Project, for example, there is the Irrigation Department paying for irrigation construction, the Development Authority paying for colonization and other farm development, and the Public Works Department paying for roads. If there are several agencies involved, this section should indicate who will pay which costs, so that later on this can be used in studying the balance of expenditure for and income from the project for each authority involved.

Here for the first time, you will need to bring in some of the methods we talked about in Economic Forecasting, because you will need to make quite clear what assumptions you are making as to changes in prices and costs, if any, during the period of construction,—whether you are assuming the costs are going to stay just like they are now, or whether you are assuming the costs are going to rise or fall.

It would also be desirable if possible to show a comparison of the estimated costs with actual experience, either on this project or on other similar projects elsewhere. That may be particularly important because many countries have conditions quite different from other countries. The costs you are showing particularly to an outside agency such as the International Bank, may differ quite sharply from what their experts have found in other countries. So you need to show from experience in your own country that the costs you are calculating are reasonable and valid in the light of your own conditions.

In addition, a breakdown should be shown as between the cost of things that can be supplied from those produced within the country—your own labour, your own materials, your own cement, and the cost of the facilities, services, and equipment which will have to be imported from abroad. That may be quite important later in considering the financial side and in considering how much external finance you ask for and where you will try to get it. If you know quite closely, it will also be desirable to show something about the countries from which the products or services are to be bought, and at least whether they are coming from the Sterling block countries or from Dollar countries. This might necessitate changes in your financial plans. You might get loans from a bank in England to cover foreign costs or (from the point of view your national authority), you may be able to use sterling balances, but not of course for dollar goods.

III Technical and Economic Appraisal of the Physical Productivity and Prospective Income of the Proposed Development, and of Markets for the Products.

This chapter of the report involves the technical appraisal of the physical fertility of the proposed development, no matter whether agricultural development or industrial development is involved. Each would be quite different.

AGRICULTURAL DEVELOPMENTS

Appraisal of productive value of the increased resources

(i) *Resources available*—Agricultural Development depends for increased production on the several types of soil present in the area on their productivity, on the resources made available by the development such as irrigation through canals or better drainage facilities, correction or waterlogging or other activities and on the effect of those resources on production.

(ii) *Evidence on the probable increased production*—Can be obtained from three different sources: (i) experimental evidence on the gain in yield from such practices, from experiments that have been conducted preferably in the area involved, and estimates of the production expected as a result of the use of the water, drainage and so forth; (ii) from practical experience with such practices in the same area, and (iii) experience on the same type of soil in other areas. It is also desirable to show what products have been found suitable.

It is quite important in organizing the practical evidence and the experimental evidence, to distinguish between what can be done under controlled conditions on experimental farms and what in fact farmers do succeed in doing on the average in the region. It is no use to show how much you could produce in the region, if all production was on experimental farms, because in fact the region is not going to be operated as one big experimental farm. You will not be able to cultivate, fertilize and water the crops with as much care on actual farms as on an experimental farm. You may expect the farmers in your region to secure average yields above what the farmers in other similar regions have averaged, you may organize instructional and advisory services to help them to do better, but don't overestimate what the results will be. It is always possible to set up an ideal farm plan and to show under that ideal farm plan, that everything is happening just right. Almost invariably in practice your costs are higher and your returns lower than expected. So in making calculations of this sort, try to keep them as realistic and as practical as possible.

(iii) *Evidence on farm organization*—It is necessary to show not only what kind of crops can be grown and what kind of yields should be achieved, but also, as you have seen from your previous work both with Dr Taylor and Dr Lund, it is necessary to show what these mean in terms of the results on individual farms. That means for the size or sizes of farms you expect to be organized in the region, and for the kinds of crop rotation you expect them to use, how the farm budget is going to work.

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out side Here you have to look at the economic side as well as the physical side. You need to show what will be a reasonable production, how much will be home consumed for food, feed, or seed, how much will be available to be sold and what will be the resulting incomes and expenditures on various sizes and types of individual farms. That of course involves making some forecasts and assumptions on what future markets and prices will be, along the lines discussed in other lectures. You may believe that some of the farms in the region on one type of soil will follow one type of farming, but other types of farms will prevail on other types of soil. For example, they may not be able to grow cotton on that soil and will have to have a different type of farming. So you will have to work out farming organization and budgets for each of these different types, and show what each may be able to produce, sell and pay back for the water or other public services used. Similarly if there are sharply different soil types in the region, it will be desirable to work out your farm organization outline and budget separately for each of these soils.

You might also compare returns from various sizes of farms, you might want to show if you are setting up a project in terms of 10 acre farms, what would have happened if you had taken 8 acres or 12 acres, or at least have a brief indication. More of the total output would go for family use on an 8 acre farm, so that little would be left to sell. It is probably desirable in many cases to show that if the farms are made too small that the farmers cannot pay back their loans, because the pressure of population is so great in many countries that administrative officials are always likely to ask: Why don't you use smaller farms and take care of more people on this project?

(iv) *Speed of settlement and development*—How rapidly are the agricultural areas likely to be settled up, how many farms might be started each year? After a farm is started, how long will it take the farmers on that farm to reach full production? You remember in the Thal, the low yields they got the first year. Some of the villages, recently settled, were not growing enough feed to even have dairy cows for milk for their children. It is desirable to work out as accurately as you can both the rate at which farms may be settled and the length of time after they are settled when they begin to reach full production. That estimate should be supported with evidence of how long it has taken to reach full production on other earlier projects. You will find in some of the reference books in the library, information on the speed in which production has increased in past projects, on the way, the number of farmer settlers increased and the acreage and production of crops. You should make your estimates realistic and practical on how rapidly the production will increase, how rapidly the settlement will take place.

(v) *Dealing with special problems*—Then finally you should show from the evidence that is available the best means of dealing with any special agricultural problems which exist in the area, such as in the case of the Thal valley, how the shifting sands could best be dealt with. In areas that have excessively light or excessively heavy soil, what special problems do those soils present, and how you plan to meet those problems? Or if the

soil is very devoid of organic matter, how will that be corrected? In the Thal area we saw that farmers would need to grow and plough under green manure crops during the early years, to build up the organic matter in the soil. In such a case you have to show in your farm plan the costs of seeds for such crops, that are going to be ploughed under, and that the farm plans provide the necessary labour, seed, equipment, etc

INDUSTRIAL DEVELOPMENTS

(i) *Expected products*—What amount of product can be expected to be produced from resources and labour available and the equipment to be installed. That covers what is the capacity of the plant, and what are the resources

(ii) *Speed of completion*—With the operating conditions that prevail in your region, how rapidly will the plant be completed, and how long will it take to reach full production after it is built, in the light of experience with similar industries in other regions? If you are starting a cotton mill for example in a new region, how long will it take to get the mill to operating, and how long will it take to get running at full capacity after it is started? It is not only the job of getting the mill running, it is also a question of training the workers you are going to use. You may bring in some experienced people to start the operation and then later on they will teach the others. But no one learns to do a job the first time they try. I was talking with the owner of one of the large cotton mills in Lyallpur. He starts his workers out, after an apprentice period, taking care of 200 spindles and then after they have been working for some months, he gives them practice in handling more spindles, until he trains them up to a point, where each person can service 400 spindles. So he is bringing them up step by step to the full production and the labour costs per unit he had assumed when he purchased the equipment

(iii) *Expected quantities of products*—If the plant will process agricultural products from the region there is the question of how much of such products will be available for its use, say 5, 10 or 15 years, after the time the project is complete. Answering this question involves field experience with similar production in other regions. If you put up a sugar factory or a canning factory for fruit, or a Cotton ginning factory in a region not already growing such products, you can't expect in the first or second year that you will instantaneously have a volume of products ready to operate the plant to full capacity. There you face two difficult alternatives. If you build the plant too large, it may be many years before you will be able to operate at full capacity and so that means that your overhead costs will be high during that period, because you have to pay the interest and depreciation on the whole plant, even though its running far below capacity. And if you build it too small, then you may find when you do reach capacity that your operating costs are higher per unit than with a larger plant. So you have to select between those two alternatives the size of plant you can get going fast enough so you will not be crushed by the overhead charges, and large enough so after you do get it going, you don't have too high costs compared to other larger plants. The larger the plant is, the lower

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the cost is per unit of production, and the less overhead charges for the equipment are upto some optimum point for each type of product.

On the other hand, the larger the plant, the further away you will have to ship your products in order to find a market for them. If the product is heavy or bulky, and expensive to transport, you have to strike the best balance between the increasing costs of shipping and marketing over longer distances with larger volume, and the decreasing costs of production within the plant.

(iv) *Special technical problems in the region*—What are the special technical problems in the region effecting the operation of your plant? For example, some manufacturing plants require a certain absolute humidity and relative humidity maintained inside the mill. If the temperature gets too high inside or outside during the summer time, it may require very expensive equipment to aircondition the plant, to cool the air or even refrigerate the air. Cotton mills require special equipment to control the amount of moisture in the air. But if you have a saturated atmosphere at 120° temperature, no one can bear to work in it and even the equipment may be affected as well as the workers. Another problem which is frequently overlooked in locating industrial plants is the suitability of the water—not only farms need water, many types of industries need water. The generation of electric power by thermal plants requires a large amount of water for cooling to generate the power efficiently, so you need a large and dependable amount of flowing water to make a steam electric plant efficient. In considering industrial projects, you will have to consider both the volume of the water and its hardness. The water may be so hard, it may have chemicals in it that make it unusable for different types of industries, or it may corrode the boilers and other equipment. These are just illustrations of the sort of natural conditions that have to be looked into, to see whether a particular plant fits the region. In making wood pulp or in making paper, again the quality of the water is very important. If you consider the setting up a chemical plant or smelter there is the question of the suitability of the specific ores in the region, or the other raw materials of the region. There are many different ways in which iron appears in nature, for example, and the type of plant has to be adapted to the proper use of the available ores.

After you show what difficulties exist you must know how you plan to deal with them. If the water is not suitable, you might find it possible to treat it chemically to make it usable for example.

PROSPECTIVE MARKET

It is also necessary to consider the possible size of the market for the products to be produced. If the products are to be sold domestically how large is the domestic consumption and how much of that is already supplied by other domestic plants? How expensive will it be to ship the product and to set up marketing arrangements for it, through the whole territory to be reached? In how much of the country will it be possible to sell the

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product at a price as low as or lower than, imported products of the same quality can be bought? How long will it take to establish a reputation for the new product, in competition with the previous supply¹?

Similarly, if the product is to be exported, how expensive will it be to strip and sell the product to export markets? How large a volume of sales can be expected? What is the trend of world supply, demand, and prices as affecting possible sales?

In both cases agricultural and industrial, the analysis must be finally reduced to terms of how much of the product can be sold, by time periods, and the price estimated to be received at the factory or farm, in the light of all the circumstances and outlook for the commodity (See also Chapter VII, Section 1)

PROSPECTIVE OUTPUT FROM THE PROJECT

The final point is to bring together in as definite terms as you can give, the prospective output you expect will result from the new development, in the light of the technical appraisal of the possibilities. This should cover both the eventual output. At the completion of the development and an indication of how long it will take to reach that by stages, and the sales value of the output in the light of the economic outlook for the products.

ADDITIONAL COMMENT

One point on the general presentation in the importance of experimental evidence in dealing with a new region. In many cases if you take up a project for a new region you will find that there is no experimental evidence for that region. Every one of your countries have had many such projects—some of them in 20 or 30 years old—the history of which will throw much light on many of these points. Also, you must adjust your future research work to provide experimental evidence on the possibilities of future projects. In planning your agricultural research programme you should locate some of the experimental fields, in some of the regions where you expect to develop agricultural projects in the future. Then within the next 2 or 3 or 4 years, you will begin to know what some of the answers are and can plan the project or carry it forward without having to operate on the basis of guess work, and not having to make very large expenditures on equipment or canals or ways of putting in seeds, hoping you have the best methods, without knowing by experiment whether they will work. Even before you have irrigation water ready from canals, you can put in a tube well and use pumped water to find out what the effect of water on production is under the actual conditions for the region.

You may not be able to use some of the suggestions on what should be presented in presenting a development project, because you don't have the necessary experimental evidence. A little planning of experimental work to fit into the development of your country will help

¹For a detailed example of steps in studying the size of a local market, see "Will Making Concrete Block Pay in Your Community?" U. S. Dept. of Commerce, Industrial (Small Business) Series No. 23, Washington, 1945, pages 1-5 15-18

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The economists problem is not only what is the ideal way to do a thing, but more is what can be done practically within the limits of the time, energy and resources that you have in your country. No doubt there are many technical problems in making existing farms more productive on which possible experimental work can be well utilized, and in many countries experimental work has helped to improve the general efficiency of farm production. You don't want to put too much of your resources on research, so you have to plan how much you can afford to do and how much of it should be in developed areas or in undeveloped.

Here in Chapter III, we started out to be considering solely technical appraisals. But we could not talk very far on farm organization without bringing prices in. Similarly, possible markets and prices for industrial products had to be considered, to estimate the possible value of the products. Questions of marketing and of economic demands for the product will come up in the later chapter, where you consider costs and returns. But here, we had to bring some of the results of those considerations forward in order to consider the economy and economic productivity of various possible farm organization plans in the region.

One other point is the relation of a new industrial plant in a region where there has been no such industry to its ability to secure the supplementary resources and facilities to make that plant work economically. If you by an automobile here to-day you find garages, repair shops and gas stations ready to service and fuel it for you. The same way in industrial plants, if you begin in an established region, you depend on special services that have grown up around the industry, not only on skilled labour used to working on such plants, but also on skilled personnel to repair the equipment and provide the special supplies you need. If you bring an auto into a completely uninhabited region, with no facilities, then you have to repair it yourself and to import your gasoline and your oil and make every adjustment yourself, or train a mechanic for the purpose. It is a far more costly affair. The same way if you start a new mill in a region where there has not been any mill of that sort, your cost to provide these services that ordinarily are provided by other independent establishments may be quite high. So you have to consider not only the plant as a unit, but also the supplementary services needed to go long for efficient operation.

IV Proposed Administrative Arrangements for Conducting Development

This subject overlaps 100% the course that Dr Clawson is teaching. In that course he is going into all the problems involved in working out effective administrative arrangements for a project. Here we are concerned with what we should say about those arrangements in drawing up your statement of a proposed project after they are planned. In some cases you might be writing out the proposals and statements for a project which had not yet received legislative or other sanction. In that case the proposal might include legislation to establish a project authority. That legislation might not be passed until it was assured that the project was to be carried

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through. It might be the statement was being written to show what legislation and financial and administrative arrangements would be needed

Points which should be covered include --

- 1 responsibility for planning, construction, and operation,
- 2 the division of powers between different authorities,
- 3 the relation between the project authority and the individual people on the project,
- 4 the arrangement for supervising construction, and
- 5 the arrangements for operation and maintenance

PROPOSED ORGANIZATION AND RESPONSIBILITY FOR PLANNING CONSTRUCTION AND OPERATION

This section should indicate quite clearly what agency or agencies have the responsibility of those operations. If the plans have already been drawn, who drew the plans should be shown. If there was no participation in drawing the plans by those who were going to carry them out, what provision will be made for those who will carry them out at least to sit down and discuss the plans with those who prepared them, to ensure continuity of action? Likewise, who has the responsibility of constructing the project? Finally who will have the responsibility for operating if after it has been started?

PROPOSED DIVISION OF RESPONSIBILITY AND POWERS BETWEEN AGENCIES

This should show the proposed distribution of duties and powers between existing local government agencies, provincial government institutions, and national authorities, and also the special project authority, if any is to be established. The statement will need to make clear the division between these several authorities (i) as to administrative powers—who is going to be responsible for doing what and how are they going to work together in doing it (ii) as to the financial power and responsibility. What power will each agency have on the financial side, and what responsibility does it have? That includes the power to levy taxes, power to collect charges from farmers. It should also show what responsibility each agency has for financing the project and in what way. Finally, the legal basis for any new or special project authority should be shown. It is not enough merely to say that it is proposed that project authorities will be established, with such and such a structure or such and such a board of directors or such and such officers. You must also show that there is an adequate legal basis for it in your country. It may be that there is already existing general legislation under which this can be done—the incorporation of new agencies by the government may be already authorized—or it may be that special legislation will be needed to provide for it. Or there may be a provision in the constitution or other basic law which makes it impossible to set up such a special authority—amendments or changes in the basic law may be needed to make it possible to set up the kind of authority that you have

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outlined. Such problems need to be explored by lawyers and a statement written showing what will be the proposed structure of the authority you are going to create, that it will be possible to go ahead with it, that you won't run into unsuspected legal snags. Such legal difficulties, even after you had assured the financing, might hold you up sometimes for a couple of years

PROPOSED RELATIONS BETWEEN THE PROJECT AUTHORITY AND INDIVIDUAL FARMERS, SETTLERS OR BUSINESSMEN

This would apply to relations between individuals and the responsible local authority, if the project is being operated by the local government or the provincial government rather than by a new authority or by a private agency. Projects might be set up by a private or even by a mixed corporation, whichever the form is, as well as by a public agency. Here we explain the proposed relations with the individual farmers or settlers or businessmen or others who are involved in carrying the project through. Those proposed relations will cover many things. Arrangements will be made both ways. On the one side are arrangements made by the agency for facilities to be provided by the agency to the individuals who will be carrying on business on the project. On the other side are the scheme of payments or repayments by the individuals to the agencies. In some cases if you have divided responsibility as in the Thal, those repayments may be made partly to a local authority and partly to other institutions. You may have to pay provincial taxes or national taxes. Those arrangements should be planned and clearly shown.

Also you should plan out rather thoroughly what scheme of repayments is going to be used. In an irrigation project it may involve the question of whether water will be paid for on a per acre basis, a crop acre basis, or on a quantity of water basis. The method selected should be such as will secure the most efficient use of the water available to prevent it from being wasted and to secure the largest crop or the largest annual production with the water available. Are the proposed charges reasonable to the farmer as well as adequate to meet the project cost? Of course the discussion of that last problem will need to look to two parts of the work—back towards the discussion in Chapter III, of how the economy of the individual farmer works out, on the individual farm units of that region, and forward to the later discussion of costs and returns (in Chapter VII). But here from the point of view of that one thing, the proposed constructional relations, the proposed relations between the individual settlers and the agency will be needed to be indicated in clear detail.

Dr. Clawson—Assuming that it is an agricultural irrigation project it will be well worth while also to talk about the present ownership of the land. If it is going to be changed it can very well be changed, for your irrigation development—how you propose those changes will take place. Now I must confess that I know very little about the ownership of barren unirrigated land in Pakistan or any other of these regions, but if it is public land owned by the province or the Central government to-day—how do you propose to transfer that to private ownership. If it is now privately owned

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how do you propose to acquire ownership. It has been the experience in the U. S. that if you do not exercise some form of control over such transfers, the present owner of the barren land captures a great deal of the so-called unearned increment from the development, and often times saddles the settler with an impossible debt. Either he absorbs a lot of his scanty capital in the purchase of land and does not have enough to develop his farm or he incurs an excessive indebtedness or both. Anyone examining a project report and a proposal for financing would want to know something about the proposals for shifting land ownership from its present ownership to the future ownership.

PROPOSED ARRANGEMENTS FOR SUPERVISING CONSTRUCTION

This will involve all the things that Mr. Clawson will talk about on this subject, showing how in the case of the particular proposed project the various problems will be handled. One of the most essential ones is (1) will the construction be carried through by the agency or by other public authorities directly on their own account, or by contractors? If it is done by contractors, will it be done on a cost basis or will it be done on a fixed price contract basis? Further, how are you going to make sure the contractors are competent to do the job? Even if you find the contractors, what assurance do you have that they have the resources to live up to their contract to do the job at the price they have agreed to? How are you going to supervise construction, to make sure that they build according to specification? What checks do you propose to use to make sure that you will get what you are paying for? All of these questions must be answered.

Western contractors are used to a very careful check of each stage of the operation making sure that the cement is of the strength agreed upon, that the thickness of the wall or the thickness of the pavement is of the thickness specified, that the standard of performance, such as the control of the amount of water and cement in concrete, the control of the composition of the steel, the control of the accuracy of finish of the equipment, is carefully done. If these controls are not carried out sufficiently well in the East, western contractors, used to operating under a strict governmental control, and getting out here where they could operate without those strict controls, may take advantage of the situation and make quite unreasonable profits by skimping on the work. All of that will come up under how you propose to see that the construction is carried out according to plan, according to specifications, at the price agreed upon, and within the time agreed upon.

In letting contracts, it is essential not only that the job be done but that it be done within the agreed time for each part of the job. It is very evident on some of the projects we visited where suppliers have not delivered the equipment they had agreed upon at the time they had promised, that the whole project might be held up for a very long time. In the case of the Rasul project there is about a year's delay there, because of the failures to deliver two rather small parts on time. A year's delay to the completion of that project on the one side adds to its cost and on the other side deprives the country of the services it would render for a whole year, which is a pretty serious thing. Scheduling the successive steps in the construction so that

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they will fit together, getting contracts signed for the delivery of parts in sufficient time to fit into that production scheme, and making contracts ahead with reputable contractors and providing adequate indemnity to be paid by them in case they fail to meet the time established, are all important parts of the arrangements for projects of this sort

PROPOSED ARRANGEMENTS FOR OPERATION AND MAINTENANCE

This should cover, how the project is going to be put into action, how you are really going to work out the management problems of making the thing go. There are many sub-items that could be considered, six may be mentioned here

(i) *The recruitment and training of the staff*—How do you plan to get together the staff necessary to handle the operations of the project? That would involve showing a personnel table or a manning table, laying out for the authority that is going to run it what kind of staff is visualised—how many people. Next, where you are going to get them from, if you don't have already have them? Then what training are you going to give them, so they will be ready to do the job when the time comes? Their learning the job may involve recruiting some of the operating staff locally, long before construction is finished, having them work with some of the people who are supervising the construction, so they know the project intimately in its parts, and conducting training schools for them at the same time the project is being finished, so by the time you are ready to start administrative operations or control of operations you have the people ready to function on that part of it

(ii) *Maintaining efficiency of operations*—That would cover such things as keeping control of the way water is handled, the way gauges are regulated, the way the tractors are maintained, the way the whole thing is operated. In the case of a factory it would include proper maintenance of the equipment, oiling of the machines, inspection of the product, and adjustment of equipment

(iii) *The plan for colonization or settlement*—This applies particularly where a project, such as an agricultural project or a forestry exploitation project, is opening up new country, not yet settled, and where you are going to have to bring new people in to establish a new community. Many things are involved there. What system are you going to set up for getting the settlers? Are you simply going to let them come of their own accord, are you going to go out and recruit them, are you going to select them from refugees or unemployed or others waiting for jobs? What method of selection are you going to use? Will you have some basis for selection to try to get people best fitted to the conditions and opportunities there? Will you take single men or married men with families? What ages will you take and so on. And then, what operating methods do you set up for bringing them in, for getting them started in the new location, for carrying them through the period until they become self-sufficient. You have already seen some of those things in operation on the Thal project, and have gotten some idea of the hardships settlers face, and the difficulties of getting

started in a pioneer environment. This part of the plan should show how it is proposed to deal with those settlement problems.

(iv) *Supervision of agricultural or other productive operations*—Whether the project involves a cotton mill, a ginning plant, or farms themselves, how is it proposed to get the operations, done at the level of efficiency called for in your plans and prospectus? If your plan calls for attaining an average yield of say 10 maunds of wheat to the acre in ten years, and ploughing under green cover crops to build up the organic matter as in the Thal project, and your settlers are people who are not used to farming under those conditions and not used to practices such as ploughing under green cover crops, what method do you propose to adopt to get them to use these improved methods? What people will you employ—agricultural advisers or consultants to teach them? How will they establish contracts with the farmers and what methods will they use in getting the farmers to follow their advice? For an agricultural project that runs in many directions—provision of improved seeds—of improved planting stock imposing methods of planning, cultivation and fertilization, and all the other details of agricultural operation. You are trying here to get done perhaps in two or three years what might otherwise take a generation to accomplish—to get farmers to farm in a different way from what they have been farming before and under new and difficult conditions.

As an illustration for the need for carefully thinking through such services, I can give one illustration I saw in a development project in one of the countries of this region. In this case the project reclaimed land which was subject to occasional overflow. Some dykes were put in to check part of the overflow and crops were to be grown in the period between floods. Villages were carefully located so that they were on high ground and would not be subject to normal floods. At the time I visited the project the first settlers had been there for about 6 months and had planted one crop. Most of them had mortgaged most of their possessions, including in some cases their taking loans on their blankets and their winter clothing so that they could get the seed for their first crop. The crop was due to be harvested before the cold weather set in. They went out and planted the crops but no one told them which land was subject to overflow and which was not. No one gave them any information on the elevations of the land they were farming. As a result, with just the average river levels according to the people in the village, 9 out of 10 acres they had planted, had been flooded out. They were left penniless without any crops or any food for the winter. Well that you see is an illustration of a case where the plans were alright, but where the detailed instructions and supervision to the farmers necessary for them to understand how they had to farm in the light of those plans applied to their own individual farm operations, had somehow been overlooked. Another illustration of the same sort is in the western mountain country of the United States, where there has been a great deal of irrigation work done. Out there they have a saying that it takes three waves of settlers to get the country settled. One wave of farmers comes in, break up the land, build houses of some sort, and plant the first crops. Then something happens, they go bankrupt and leave. Then another wave comes in, and they go bankrupt and they also leave. Then finally a third wave comes and they manage

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to make a go of it Your countries here don't have enough resources in the hands of your people to be able to start again. You can't afford the luxury of having a succession of settlers come in and lose their savings, before new areas get under cultivation. Your projects must pay almost from the beginning if they are not going to be a liability to the country, and careful advance arrangements to see that they are helped to farm right from the start are essential to that end

(v) *Provisions for dealing with educational and health problems, technical training and other necessary services to workers, farmers or others on the project*—Each one of these points involves a great deal On the educational side, in addition to the technical instruction and supervision to the people, you need to see that adequate primary and secondary schools are established, and industrial training schools in industrial regions arrangements must be made for teachers to be brought in competent to give the teaching, and for the people to get their children to school On the health side, the plan needs to show how you intend to deal with the necessary health precautions to be taken in the region This should cover the things that Dr Chellappah has discussed in his three lectures. What special health hazards exist, what measures are being taken against those hazards, what health services will be set up, hospitals and clinics, nurses, and even provision of midwife services, how many doctors are being provided? The whole question of providing a standard of health (a) which is necessary to make the project work and (b) which brings the protection of health in the project at least up to the average of the country, preferably higher

On this phase as Dr De Vries indicated, there is of course always a choice that must be made as to how far you can go on health or for that matter on education or on housing, in view of the wealth and resources of the country that are available The things that doctors tell us should be done—just as the things that a nutritionist tells you should be done to feed yourself and your children most effectively—may be more than can be afforded I am afraid that many of the things that Dr Chellappah outlined taken altogether would involve more expense than can be supported with existing Asian average incomes In other words if you waited until you could provide perfect health conditions, you could not have the project at all So what is involved is the choice as to what are the most essential things that need to be done within what can be afforded, and trying to make sure that both on the educational side and the health side, the essential things are done and provision is made for taking care of other things as rapidly as the region reaches the income level where they can be afforded But you must at least be certain that the project will not fail because of lack of protection against diseases or pests which can be readily and cheaply prevented or controlled

The provision of technical training of course ties back closely to the previous point of supervision of operations In an agricultural region that technical training might take the form of special evening courses or training courses for the adults on new methods involved in the kind of farming they were going to do For what we might call the teenage level

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of children between 10 and 15 schooling might be provided on some of the things they need to know to fit into the farming of the region, plus some higher technical training for most promising young people, so they could advance later to help "to run the show," and to fit into the administration. That technical training can be supplemented by some little training in some of the basic things involved in agriculture even in the elementary schools. The elementary principles, the elementary facts of cleanliness and sanitation which Dr. Chellappah discussed, some of the elementary facts of chemistry can be understood and appreciated by children 8 to 12 years old. Even children 5 to 8 years old can grow plants in their classrooms and in their school gardens and learn some of the elementary things of caring for plants and caring for animals. In many of the Western countries, every kindergarten or every primary class has a small garden and some pets that the children can learn to take care of. They learn not only some of the elementary ways of taking care of plants and animals, but also some of the basic scientific facts of the way the seeds germinate, the importance of air, water, soil, and even fertilizer to the growth of plants and of food, water and cleanliness to animals. If some of those things are included in the elementary education, so that farm people don't grow up ignorant of the basic scientific facts on which their production is based, later on it would be much easier to teach them the new methods and the improved practices, which the scientific workers have developed.

Provision for housing should also be considered, and provision for markets and for the other necessary facilities and services. Also provision of adequate water for health of the people, as well as water for livestock and irrigation. One could expand this to considerable length. There are also here the same problems that I mentioned in respect to education and health. How much of the things that are desirable to do, can be done within the resources available? How much will you leave for the people themselves to do later? In the Thal region quite complete houses were being built and the people were being settled in finished houses. Under the very severe desert conditions there with continuous winds, heavy sand storms and terrifically hot summer temperatures, there probably is good justification for doing that. In other projects where the conditions were not so severe and where people could build their own houses for themselves, out of the mudbricks they can make on their own land, there might be an argument for putting somewhat more of the initial capital into getting the farm started. For example you might have some of the crops planted when they came on to the farm, and put less capital into building the villages for them. Perhaps if you had a good plan worked out and somehow of helping them to build their own houses, it might be possible for them to come and do a lot of that with their own labour thus reducing the debt they had to start with, and also reducing the amount of capital that had to be put in before the settlers had started. There are choices that have to be made in everything of that sort. The many different items under this phase should be thought through in advance as far as possible--what can be afforded and what cannot be afforded to make sure that your plan does provide for what is necessary to make it work, and for the essential minimum conditions all through.

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(vi) *Provisions for supplying credit to farmers, settlers, others or businessmen*—In many cases, as both Dr. Singer's and Dr. De Vries lectures indicated, credit is essential for conducting business of any sort. The credit is not only necessary especially when people have no resources of their own, to give them the first tools, the first livestock and the first seeds, but it may also be necessary to carry them through until the first crops are harvested or longer. It may be necessary to build up farm reserves such as reserves of food and feed so even if they had a bad harvest, they could feed themselves and their livestock till the next crop and not have to go to moneylenders, or have to stop production because they can't keep going. Arrangements for supplying them necessary credit are thus quite important. The proposed arrangements, whether for co-operative organisations, for banking credit, or other arrangements for how production is to be financed, need to be indicated quite clearly.

(vii) *Provisions for marketing and transportation*—This includes arrangements for marketing the products and provisions for the facilities for necessary transportation. We saw a good illustration of that, well thought through, in the Thal region. The layout of roads, the layout of market towns, and the relations of both railroads and roads to markets and market towns, through which the marketing should be done, was carefully planned and provided for. Provision was made for building the streets and putting in the water and sewer for the town. In most cases they were selling the land to private merchants, depending on private enterprise to put up the building and to establish the marketing agencies. That may need to be supplemented by some public regulations—some calculations as to how many cotton merchants and how many grain merchants and how many rice merchants were needed in a town of a given size to serve the community. Or else, if private agencies prove not ready to come in fast enough, to have plans ready to ensure through co-operative action or through the authority, that adequate marketing provisions will be established. Also it might be desirable in setting up marketing provisions to have some control over the charges made so that where private business enters the region with the help of the authority, there is some assurance that farmers would not be charged an unduly heavy levy for their services. Co-operative marketing agencies may be a possible alternative to that, if you can ensure enough co-operation so there is competition between private business and co-operative marketing institutions. Then both are compelled to keep on their toes and do a better job than either one might do on their own.

This is enough to indicate some of the administrative arrangements that need to be thought through and explained so that any one going over the statement of the project is sure not only that the project has been well planned and well laid out, but that the steps involved in the getting it actually going have been talked through and planned in advance.

Dr. Clawson—Most of the material you covered here, we have covered and will cover in Course IV. As you were going over these points I thought of a few additional ones that are more or less amendments to what you said. First, on the responsibility for planning construction operations,

you ought to add the *organization* for planning and construction as well as the responsibility for it. That is you did touch on that but you did not touch on it exactly on those terms. Later on, here under point 5, you did have some of comments on organization for operation and maintenance, but I think perhaps they ought to come in under planning and construction as well.

In the same general section of this outline, you might show how you intend to correlate certain of the public services particularly road and town layout with farm layout. Now my own experience in the U S is that considerable economy is possible in the efficient layout of roads and in the efficient layout of towns in relation to forests. In the Colombia Basin report, we calculated that by a well planned system of roads and a well planned system of social services in relations to the towns and also by a good marketing set up, we could make annual savings, sufficient to amortize all the investments required for the buildings. Now that may have been an unusual case or it is a case you will find here in some instances. The irrigation of presently barren and relatively barren area, and the development of roads and towns, and social services generally in relation to your farms, might be an important problem.

It is quite common in irrigated work in the U S to provide for a so-called "development period." The law authorizes it to be established by the administrative agency for as long as ten years. During that period no charges are made on capital account. In other words if the farmers are to amortize the cost of the irrigation project, no charges are made on capital account during that development period, and in some instances even no charges are made for the operation of the irrigation system. And it has gone even further in a good many instances, special provisions for technical help are required and special credit in the development period. Unless it is an unusually favourable situation in the first two or three or even four years, farm operations on raw land are likely to be conducted at a loss. In some cases there are even actual cash losses, that means cash outgo exceeds cash income. The more quickly that period could be got over by special assistance and by special credit the better. But if you provide credit during that period you are going to have to provide special finance and so on, because if they do incur a deficit it is no use to say they are going to pay money back during that period.

One general point that has been raised in previous lectures is that one of the objectives in a project statement is to convince whoever reads it, that you were aware of the real problems, that there is no desire on anyone's part to have the report any longer, any more detailed than necessary. What you are interested in, is getting in the relevant material that really deals with the problems. You want to convince the reader that you really are aware of the problems and you know how to deal with them.

Dr. Ezekiel—We have covered up here what are the responsibilities that different authorities will carry. When you come down here now is spelling out the operation (in sections 3, 4 and 5) you need also to say how much of the operations outlined will be the responsibility of each of the

different authorities mentioned before, or of the individual farmers themselves, as well as how they are proposed to be done

V Proposed Arrangements for Financing the Project

The division of financial responsibility between any different authorities concerned in the area should be clearly outlined. The amount of total capital needed in the region for the project and the amount to be supplied by each agency should be shown. The Chapter should indicate how it is proposed to handle the flow of funds, what they are, where they are to come from, how much and at what time. In the next chapter the relation to the national economy and the national development programmes is taken up, and that chapter will present the explanation, arguments or analysis, which show why the financial plan presented is what it is. So Chapter V simply presents what the proposed financing plan is, while Chapter VI goes into the economic and other explanations of why the proposed plan is made as it is.

DIVISION OF FINANCIAL RESPONSIBILITY BETWEEN AGENCIES

This section should make quite clear the existing division between different agencies of financial responsibility in the area or region involved. There nearly always will be at least two agencies involved, one the special authority or other agency directly responsible for the projects and second the Central Government. Only rarely is one single authority responsible for everything in the region.

CAPITAL TO BE SUPPLIED

This section should indicate clearly and in detail, where the capital to be supplied is to come from. This would show first the breakdown of how much of the currency needed (a) can be in domestic currency, and how much (b) will be needed in foreign exchange. Then under each of these heads there will be need to be a showing how much of the capital is to be supplied from current income. A government can collect taxes and by a grant or loan make part of the income from taxes available for capital investment. It does not all have to be borrowed. It can also supply foreign exchange out of current income. If the country has a net foreign exchange balance, and is earning pounds or dollars then the government through its taxation programme has a source through which it can acquire some of that foreign exchange, or through its exchange control can reserve some of that foreign exchange for capital investment. It can thus provide part of the needed foreign exchange funds out of current income just as well as for domestic expenditure. So under (a) and (b) you indicate amounts of currency to be provided from current earnings, and the amounts to come from borrowing. Under foreign exchange as long as the present monetary difficulties continue it is also desirable to show how much is needed in dollars or its equivalent and how much is needed in terms of other currencies. All of these points under (a) and (b) should show not only the total amount, to be provided, but also the period and time schedule over which they are needed.

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The time schedule is quite important, because in a project showing a total investment of say 175 crores of rupees, that does not necessarily mean that you need to use 175 crores of capital. Part of those investments are going to be made 10, 15 or 20 years ahead, as specific parts of the area are completed, are built and people settle down. You may have in the meantime the beginning of repayments on loans and on interest from other parts of the project. If you contrast the time schedule of expenditure on the project, with the time schedule of proposed receipts, that will show what the finance needed is. Even if the total expenditures on the project are going to be 175 crores—you may never need anything like that much to invest. If it is going to involve rapid sale of land or rapid beginning of project incomes, you may not need to invest more than 150 crores or may be even 125 crores. The financing plan and the time schedule of the financing plan thus have to be made with respect to the time at which expenses are incurred or receipts are received, as well as to total amounts.

PROPOSED METHOD OF REPAYMENT

(a) *Domestic and foreign currencies borrowed*

This section will show how it is proposed that the Domestic and foreign currencies borrowed are to be repaid. This would include the system proposed for repaying the capital either in an amortization plan on which so much is paid back each period, or a sinking fund arrangement where you build up a reserve, which you use finally to pay off the bonds, if they run for fixed periods. The method of financing may vary of course with the interest rate to be paid. You need also show to separate plans for repaying the domestic currency and the foreign exchange. The authority itself or the local units, except for the purchases of equipment or services in foreign funds, will not deal in foreign exchange. Expenditures in the country and receipts from sale of products will be in terms of the domestic currency.

The foreign exchange will have to be purchased with some of the domestic currency, and this involves foreign exchange arrangements which the Central Government will have to be responsible for. For some projects in the past, specific items of foreign exchange earnings have been earmarked for the paying of particular projects. For example, custom receipts in a particular port, or income from the sale of products abroad, may be earmarked to be held as a reserve for the payment of particular bonds that were floated. In general that is not regarded as a good system. The Central Government can handle all these affairs as part of its whole foreign exchange control and management to meet the obligations that are assumed by the country. So what is shown on this point should be general rather than specific.

(b) *Amortization plan*

An amortization plan would also be worked out and presented along the lines Dr De Vries presents in his course.

Next you would indicate the interest rates which are proposed to be paid on the domestic loan and the foreign loan. You have to assume some given interest rate in order to work out your amortization plan, which will show how much interest you pay each year and how much principal you will pay back. The latter may be in constant amounts or changing amounts. One point that should be covered quite clearly is the proposed period of

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grace—the initial period during which no payments at all will be made. In most long term development projects it is not possible to expect receipts to exceed expenses during the first 5 or even during the first 10 years. If you start making any payments back on capital or even paying interest, you may be simply making those payments on capital or interest out of borrowed money. So it is foolish to attempt to make them at all. It is better to have your repayments start at the time you estimate that the project will actually begin to more than meet its costs. In that case of course you have to allow for the compound interest on the interest not paid, to be added to the debt. Then when you do start payments, your payment must cover interest, and instalments on the actual repayment of both investment and of the accumulated or unpaid interest.

(c) Time schedule of advances

The financing plan should be worked out so that the capital will become available in instalments at the times at which you expect the project to need the domestic funds or foreign exchange. You certainly do not want to borrow money and have it standing idle while you are paying interest on it, especially interest on foreign exchange. When you negotiate the loan, you should negotiate it in turns of a total overall commitment, so much payable the first year and so much the second and so on as the project goes on.

PROPOSED SOURCES FOR THE CREDIT NEEDED

There may be one or several sources, especially for domestic and for foreign funds.

(a) Domestic funds

The credit to be raised in the country might be raised by an agency like the Thal Authority selling its own bonds directly to the public, or these bonds may be guaranteed by the Central Government or the Central Government might raise the funds for it by the sale of its bonds or they might be borrowed from insurance companies or in other ways. Small projects might secure their finances from a national government, or a national development corporation, or a development financing corporation set up by the Central Government for the purpose of providing loans for investment projects. Such an agency might itself sell its bonds, or the government might sell its own bonds and subscribe to the corporations stock.

(b) Foreign funds

There are various sources of foreign funds. These include loans from other governments direct to your government, or loans from special financial institutions. The Overseas Development Corporation in England, the Export-Import Bank in the U S, or the International Bank or any other agency of that sort. The statement should indicate where it is proposed to get any loan needed.

Chapter V does not attempt to explain *why* the financing plan is set up the way it is, but simply to show clearly what is proposed and how it is proposed to be done.

Dr De Vries—I would like to make two general remarks on this chapter

First, I presume that this has been set up on the basis of foreign exchange control in the country that is making its development programmes. This is a realistic approach, because I believe all the countries here except one have foreign exchange control. If there were no foreign exchange control then the whole chapter will have to be revised and simplified. Although the distinction between foreign exchange and domestic currency would still exist and although you must take account of it in your development programme, still income and expenditure in foreign exchange is much easier to deal with where there is free exchange than in the case of foreign exchange control. On the other side, foreign exchange control gives powers to a government to set aside earnings from some of the exports. I believe that a short description of the foreign exchange control system and who is the authority that determines and sets aside the money should be included in your statement. Sometime the government directly and sometimes special bodies are formed to do it. So if anything of that kind exists in your country, you will have to explain that to show that indeed there is consistency between the authorities that will be borrowing and the authorities that can decide on the repayment. That need not be the same authority.

Second, you have to see for yourself the financial implications of a development programme, in the light of your own position. In recent years most of the agencies that are lending out the money, work on a so-called project basis. There is in this connection a very clear distinction between a *general loan* and a *project loan*. If it is a general loan then the lending agency looks into the financial implications and the possibility of repayment for your economy as a whole and your whole exchange position. It is customary to give the loans on a project basis and that means you will have to show first of all, the implications for each project. There again there is no fixed rule. It may be that although a certain project by itself is not self-liquidating in terms of total money involved, total capital involved, and foreign exchange involved, still the lending agency will grant that loan because of other advantages. It is not a deciding factor whether that loan will be granted or not. But the analysis from this point for the project separately will be asked for. If you have more comprehensive plans, like those now proposed by Pakistan to the World Bank, you can show their financial aspects in two stages—first for each of the different projects separately as covered in Chapter V and then again at the end in combination with one another. If you can show that the combination of the projects is more profitable not only for the national economy, but also promises to give better possibilities of repayment, then you have a much larger possibility of getting your country's loan through, instead of having just one or two projects, picked out of the comprehensive programme which may look appealing to the financing agency that is lending to you.

Dr Ezekiel—These suggestions of Dr De Vries are very valuable. I had assumed implicitly the existence of foreign exchange control for a considerable time ahead.

VI Relation of the Project to the National Economy and the National Development Programme

If you have a combined national programme in which a number of different projects are being shown separately, the possible benefit from that set of projects combined is greater than the sum of the benefits from each project taken separately. If a number of development projects are carried out at the same time, each one makes it easier for the others to move forward, and intensifies the possibilities of increasing the national income. If you have a national programme consisting of a number of individual projects, your project statement, after showing what you estimate the effects for each project separately, then should have a statement on the consolidated programme, discussing the interrelations between the projects, and showing the combined effect of all of them put together on the foreign exchange position. This will show a potential gain much greater than that from each of the individual projects added together. In this Training Centre we have not gone much into the statement or analysis of such a general plan because it includes interrelationships between projects and their combined effects on the national economy which would involve many matters besides those we have been discussing. We have discussed such general benefits to some extent, but have not explored specific ways to appraise them. These problems, of planning and programming the general national economy, might require entirely different training centre to explore. If an individual project is going to be part of a consolidated plan the relation of that individual project to the national economy and to the national development programme could be presented in a number of different ways. As in all of this outline the scheme of organization suggested is just one of the many possible ways this could be developed.

CONSISTENCY WITH THE NATIONAL DEVELOPMENT PROGRAMME

The consistency with the National Development Programme should be examined and explained. You do not want to set up a project which is not in proper relationship to the nation's other projects. That means showing how it is related to other projects or programmes and the effect it will have in stimulating or assisting other projects. This should include not only other projects that are proposed for loans or developments, but other industries which as a result of this project may require development. There may be related industries. Even the hand spinning of cotton cloth for example in this country as I understand it, has been held back at times by a shortage of cotton thread. Enlargement of the cotton spinning industry to provide thread at reasonable price, may itself make it possible to expand the hand weaving industry. Then there are many examples of subsidiary industries which Dr De Vries was pointing out yesterday. The refining of oil may provide products for soap manufacture and other chemical industries. Then there are related developments of all kinds of service industries. Electrical repair shops—electrical maintenance shops—diesel and gasoline motor shops—and a number of activities servicing those products which can be developed on a small scale to serve industries using such equipment.

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So we should explore these relationships as far as we can. First, how far is the project consistent with other projects in the national programme, and second how would it stimulate the development of other related industries and services

RELATION TO THE NATIONAL ECONOMY

(a) *Prospective indirect benefits*

What is the prospective economic effect of the project on the country as a whole? This is very important in the cost and benefit statement for appraising the indirect benefits to the national economy resulting from the project. One can never be very exact in this kind of estimating but still one has to get some idea of the costs and benefits involved. This should I suggest include

(i) *Direct and indirect increases in productive employment resulting from the project*—If your country has a system of unemployment payments, you could show the saving to government agencies from the reduction in unemployment payments, resulting from the project, or the reduction in the expenditures for refugee or other relief from providing them employment.

(ii) *Increased production and national income*—It may be possible to estimate the prospective effect of the project on national income.

(iii) *Increased trade—domestic and international—resulting from the project*

(iv) *Increased taxes and other revenues*, including a statement of which authorities will receive those increased taxes and other revenues. You should allow for the increased income which will come not only to these directly engaged in the project, the farmers on the farms the factory employee people of the industrial plants set up, but also to those who can expand activities as a result of the project. The indirect increases in cash income from the businesses which will be set up in the region, to buy and sell the products produced by the farmers. Revenues of the transportation agencies will increase. So will incomes, profits, and tax collections. Estimating the value of the several indirect benefits of course is very important. The estimate should indicate which authority they will go to, if there are several authorities present, for the analysis on the next chapter of benefits and costs

(b) *Prospective effect of the project on the nation's balance of international payments*

The effect will be on two-fold, first in the foreign funds needed to carry the project through, and second in the foreign funds earned as a result of the project, i.e., the effect on imports and effect on exports

(i) *The effect on imports* can be of two types—increasing imports or reducing imports. It will directly increase imports to the extent that you have to import foreign capital goods or services for the project. It will also indirectly increase imports, from the increased incomes given to

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consumers and their resulting increased demand for food, clothing and other consumer goods before the project has time to produce a corresponding increase in the nation's production. Sometimes a project which requires no foreign capital directly may still have a very substantial effect on increasing imports, if it puts a lot of people at work that have not previously been working. The food and the clothing those people need cannot be provided from the country for the time being so the products on which they spend their wages have to be imported. You may have to increase imports of food and clothes to take care of the people you put at work building a dam. So you need here to estimate the indirect effects on imports of the increased domestic expenditure, as well as any direct effects from the purchase of equipment.

Possible effects of the project from reducing imports must also be considered. If the project is going to produce food or other products now being imported by your country or which otherwise would have to be imported in the years ahead, that increased production may be very important element of value of the project to the country, at least as long as the dollar shortage and the exchange control situation continues. You can indicate the possible extent of this foreign exchange saving both in dollars or equivalent, currencies, from goods that have to be paid for in dollars or equivalent and in the reduced imports of goods that come from non-dollar sources.

(ii) *The effect on exports*—Many projects, especially agricultural ones will expand production of products which can be exported. There you need to estimate how large the possible export value will be. This involves considering the economic situation and outlook for the export products, and making reasonable assumptions on the prices at which those products might sell in the future. From this and the expected increased volume of exports, you estimate the possible increased earnings from increased exports, again separately for sales to dollar and non-dollar areas.

(iii) *Other effects*—One possible type of project in many countries, not yet generally important in Asia as it is in European underdeveloped countries, may become increasingly important in the future. This is the effect on tourist expenditures. One project may be to put up better hotels—which may be used by visiting businessmen that are coming in connection with foreign trade, who also spend foreign exchange when they come. New maritime ships, or expanded port facilities may earn foreign exchange. Or you may establish insurance companies of your own—for marine insurance or other risks which will provide insurance services which you now pay for to other countries. These in turn again will have the effect of reducing present foreign exchange expenditures, or even of earning foreign exchange from other countries. All of those effects need to be looked into.

In most agricultural projects at the moment they would be of minor importance, however.

ADEQUACY OF THE FINANCING PLAN FOR THE PROJECT

This must bring together all aspects of the proposed financing plan and also consider the foreign exchange aspects in the light of the projected

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future balance of payment for the country as a whole. In examining each individual project, you can't go into a full discussion or examination of all the problems involved in the nation's future balance of payments. Rather you need to get them from the responsible national government authorities. Some analysis of any changes resulting from setting up the single project can be investigated. However, you must show that the financing plan proposed for the single project is workable in the light of the projected effect on the future balance of payments. That is particularly important if you plan to borrow abroad to pay for part of the costs of the project, or if the project will have a very substantial indirect effect on increased expenditures for consumer goods. The financing agency abroad to whom you submit the project for a loan will want a showing that the country is going to be able to pay back the loan in foreign currency. If the project is going to involve very heavy expenditures for consumer goods, it is not feasible if the country is not in a position to afford those consumer goods, whether you are borrowing for the project or not.

Whether you consider foreign balance of payments for each project separately, will depend on whether the project is being submitted as an individual project, or whether several projects are being considered as parts of an overall comprehensive proposal. In a comprehensive plan these points can be explored much more fully than for a single project. The direct effects of each individual project on imports and exports can be examined in its own statement. The composite statement, in addition to summarizing what was shown for the several projects, will need a section like Chapter VI showing the composite effect of all the projects together, in relation to the national economy and the national financial position.

Dr De Vries—One important point made by Dr Ezekiel which is not put on paper, that I had in mind to raise. But he has done in one or two sentences and I want to stress that point very much. If you are appraising a project for your own government or especially for an agency from abroad, international or any other agency, you must not only show that it is consistent with that part of your programme submitted for loans but must also bring them into connection where possible with those other projects which your country is carrying out at its own expense and its own cost. That adds very greatly to the force with which you can justify the project and the proposed loan. If the country has a number of development programmes, and you find that the inter-relation of those programmes with other necessary developments are such that you need at a certain point outside financial help—you have a much stronger case for getting that outside help. It can very well be that some project which has to be financed from outside is just the missing link in a whole chain of development programmes that you have. If you can show that I believe you have made a very good case.

In dealing with loan applications, mostly for purposes of convenience, the bank works the other way around. Mostly in a country you will get visits from a bank mission and the first mission will come and discuss with you the national economy and the national development programme and after the Bank has digested that, then another mission will be coming.

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back with more engineers and specialists in the mission. On the basis of the first overall discussion, the study of your national economy and your development programme, they then go and see whether a certain project is technically feasible and how the finance will pay off. So although it may be very wise to put your project in a combined project, to see the implications and the relationships, in actual practice your government, and that means you as planners, will have to start with a picture of your economy and your national development projects. And then see where are the points where your programme is not quick enough to take up with other points that you can proceed with quickly and at those bottlenecks show where and why you would need outside financial help. In this whole report these points may be at the very end of your consideration, but if you are making a programme and you are submitting a year or a two years' loan application, this is the point that has to be considered first. I believe that it is a wise policy to have this general background ready at hand and because if you have that frame work, then you can present all the different figures in the picture much more easily, than if you start with certain aspects of the development project and later on you bring the specific project into the general picture.

Dr Ezekiel—Dr De Vries last point is particularly interesting since it raises the issue whether a report on a project should really start off with the specific project and then end up with its relations to the national programme. I don't have any special feelings on that one way or the other.

The further point that Dr De Vries made that the actual process of national planning needs to start with the overall first and then develop the individual projects out of that is a question of the procedure in organizing and planning, rather than the procedure of presenting individual projects. Most planning in practice, works both from the top down and from the bottom up. You may have one agency concerned with the national economy—a central planning board considering the general plans of a country and the general possibilities. At the same time, in many countries you have many agencies working on what can be done in their own fields. People for instance studying the hydro-electric possibilities and saying why don't we build this dam and why don't we put a hydro plant there. Agriculturists studying the agricultural possibilities and saying why don't you do this and why don't you do that. People are studying the Thal and saying here is a good place to increase acreage. The national planners would not have projects to fit together, when they are ready to see what should be fitted in, if other people had not already been thinking about the individual projects and working out the possibilities of what could be done. Democracy in planning in fact is a problem of how to obtain consistency in a democratic way, between planning from the top down and planning from the bottom up. In terms of this training centre, our approach is what you can do in terms of individual projects, showing what the actual and administrative problems are. Preparing national plan goes beyond many of the points we have considered in this training Centre. I hope at some future date there will be other training centres on methods of national economic planning—

and programme making which will look at the problems of setting up a general economic plan into which the possible projects will fit, just as Dr. De Vries has presented. Whether you pick up Chapter V and put that first, or whether you leave it toward the end of your presentation, you are still discussing the same subject. The order suggested for the report is a logical step-by-step order of presentation, as Mr. Vaner has pointed out, it is not necessarily the order in which the underlying work is done.

This present chapter and the preceding one bring together many figures developed in the earlier chapters. If one were to present these last chapters first, one would have to anticipate many calculations that would not be made till subsequent chapters.

VII Appraisal of Prospective Costs and Benefits

Two basic concepts presented in this chapter must be explained first. One of these is the concept of locating the costs and benefits separately for each administrative agency involved, national, provincial, local or special authority, and also from the point of view of the individual farm units or the individual businessmen showing what their benefits and return on the project will add up to. The idea is that you take each one of these agencies and show what their financial situation as regards to the project will be, what their expenses on the project will be and their costs or income from it. You thus develop a statement of costs and benefits from the point of view of each organization concerned. In the case of the Thal Valley for example, there would be one statement of costs and benefits for the Thal Development Authority, another statement for the Irrigation Department, another for the Roads Department, another for the Punjab Government, and still another for the Central Government. As a result of setting it up that way, some items that will appear as costs on one statement from the point of view of one governmental agency, will appear as receipts or benefits from the point of view of other governmental agencies. Likewise with farmers. Their statement will show on the expense side, what they will have to pay for the use of water, what they will pay in general taxes (land revenues) or in special taxes as a result of the project, and what in repayment of loans and interest to the T. D. A. Similarly on the receipts side, it will show what they will probably receive from the sale of their products. Expenses on the farmer's statement for the various types of taxes, water charges, interest and principal payments, etc., will be matched by corresponding receipts in the statement of the Central Government, Thal Development Authority, etc. The charges for general land tax, may be part of the receipts of the Central Government. If payments on principal or on interest, repaying advances from the Thal Development Authority, or for the purchase of land, will be matched by receipts of the T. D. A. In thus working out benefits and costs separately for each agency involved you show not only what the overall costs and returns are, but what the balance is for each of the different financial interests involved of the prospective costs and benefits from the project. You remember that the Thal Authority had listed as part of its receipts, the subsidies from the Central

Government as a grant to it, for the purchase of equipment and other purposes. From the point of view of the Central Government those are costs, at the same time they are benefits to the Thal Authority. In addition to showing these separately for each agency, you would also bring them together—add them up—in a consolidated statement of costs and benefits for all the agencies involved.

A second point is in respect to the time period of the statement of costs and benefits. Each item that you have when you show the total cost of the project, is a total made up of what items for each time period involved. This distribution through time is important. What happens in those first few years is particularly important. The expected distribution by time can be shown for each of the first few years separately, and then after that by 5 or 10 year periods. Such a distribution by time for each separate governmental authority might show the total cost and total returns for that authority for the entire period, and then in the same table the cost and returns in each successive unit. The series of tables of this sort for all the agencies makes a pretty good complicated presentation, but it does show, in reasonably realistic terms, what the project will mean to those respective agencies as it goes forward, and enables them to judge how far they will be able to meet their expenditures on the project in each period from the loans arranged for and the revenues which can be anticipated because of the project. Turning now to the detailed outline of the Chapter, there would be four main sections, (1) ability of productive units (farmers or businessmen) to pay the charges assumed, (2) consolidated costs and benefits to all administrative agencies combined, (3) costs and benefits separately for each administrative agency separately, and (4) general conclusions on economic feasibility of the project.

ABILITY OF PRODUCTIVE UNITS (FARMERS OR BUSINESSMEN) TO PAY THE CHARGES ASSUMED

The ability of the individual productive units to pay the taxes, water charges and other payments assumed in the benefits statement would be calculated in this section. This would be based on the budgets for representative farms (or representative business enterprises) worked out earlier (Chapter III).

In calculating the prospective future costs and returns for farmers or business units, you will need to use certain prices as the assumed future prices. As explained in the lectures on Economic Forecasting, these assumed future prices can be based up analyses of the past and present market situation trends in demand, consumption, supply, and carryovers, adjustments to the current prices if it is known that the current season's price is exceptionally high or low because of unusual or temporary factors, and appraisal of the future outlook from other agencies. The prices assumed should be set forth, and the way they were arrived at should be briefly explained in a special exhibit attached to the chapter.

After presenting the prospective annual expenditure and receipts for representative types of farming or sizes of farms, you should indicate how many farms you expect to have of each type or size when the project

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is fully developed. Then, by multiplying the individual farm budgets by the number of each and adding the different types or sizes together you can calculate a consolidated budget of estimated costs and receipts for all the farms in the project. This would show the expected gross sales which farmers on the project would be making when the development is complete (which will be useful later on in calculating indirect benefits to the national economy), the aggregate land taxes, improvement taxes, water charges, and payments for interest and repayments of interest, which the farmers on the project will be making annually, from which the various agencies involved will receive most of their project revenue.

Similar calculations should be made for each of the first few years or for the average of the 1st 5 years, and for the end of the 10th, 15th and 20th year of development (depending on the expected time to complete the development). From these statements of prospective receipts and expenditures at successive stages of development a final summary can be prepared, say for the 30, 40 or 50 years (depending on the period over which the project is to be financed), showing aggregate farm expenses and receipts over the whole period as well as the balance between the two at successive stages of development.

A statement on similar lines could be developed for individual business units, if the project involved aiding a number of individual business units to be established. If (as in most cases of industrial projects) it involved establishing a single industrial unit, such as a cotton mill or a hydro-electric plant, then the prospective annual receipts and expenditures of that unit, under the firm or authority that was to run it, would show directly in the later statements.

OVERALL CONSOLIDATED COSTS AND BENEFITS OF ALL GOVERNMENTAL OR OTHER PROJECT UNITS INVOLVED

Section 2 takes up costs and benefits from the point of view of the governmental or administrative agencies which are involved in the financial transactions. That might be shown first as the consolidated total for the life of the project and then (ii) by successive time periods. Benefits here, should cover both direct and indirect benefits. As indicated earlier, the indirect benefits will include all the calculable results of the project, including those on the general economic, which can be estimated. Those might include for example for the Central Government, the increased revenues it would earn as a result of taxes on the increased volume of trade in products being produced in a project area and income-taxes from the increased incomes by businessmen operating in the project area. If the project will expand production for export that will make a larger volume of trading at parts. With the help of the taxation authorities, estimates can be made of the increased business profits which would result from the increased volume of purchases and sales by businessmen dealing in the various products to be produced by the project. Examination of previous income-tax returns and returns of business taxes would indicate what the

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relation is between volume of business handled and taxes paid, and give a basis for these estimates, based on the total volume of sales by farmers on the project. The fact that the benefits are indirect does not mean that you cannot find an objective basis for estimating some of them.

Similarly in your estimates, especially for different governmental agencies, among the costs would be included the interest charges due at each period, by each unit which has borrowed funds and has not yet repaid them according to whatever interest rate the funds are borrowed for, and whatever repayments of principal the financing plan requires. Here of course it will look differently from the points of view of different agencies. The central authority or governmental units will be charging interest costs at the interest rate which the financing scheme sets out. If some of the funds are provided by the Central Government as a grant, then there will be no amortization charge for those. If others are loans on which interest is due, when the loan is used you charge the interest on the net amount you have not yet paid back each period. In other cases, as in the cases of the International Bank, there may be a stand-by interest charge. Once the bank has made a commitment and earmarked so much funds for a project, it makes I believe 1% charge on that money even though it has not yet been paid out, for holding it ready to pay, and that will be one of the expenses of the project.

You charge the individual farmers interest for the advances made them by the authorities, at a higher rate than the rate at which the authority borrows its money. That does not mean that the difference is net profit. The authority in its schedule of operating costs will need to include the cost of the overhead, the book-keeping and the clerks and the accountants, who will handle these repayment by the individual farmers and keep the records. If you have a great many small loans to farmers that have to be watched and serviced, arrangements made if they can't pay for extending the loan, checking them up to see if they are paying off the loans when they can, etc., the cost of handling a large number of such small loans will be very high. It frequently cost much more than ordinary bank interest to handle. It may require in some projects a substantial margin, say 3 to 4%, above the rate at which the authority borrows its funds. I hope Dr De Vries in his discussion of financing problems will touch on this question of the administrative costs of handling a large number of small loans.

Finally after working all these points out for each agency, you show for each agency the ratio of costs to benefit overall and by time periods. These can then be added up to get the consolidated figure.

I suggested that you first present the over all consolidated figures without regard to the individual agencies. These consolidated figures would be supported by consolidated figures showing the distribution of consolidated costs paid and benefits received by time periods, which would show at a glance when the project was expected to begin to pay its way, and how the projected time schedule of surplus for repayments (if any) compared with that of payments due on repayment of capital. A

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simplified table of this sort, with hypothetical figures, will illustrate what is meant.

TABLE I
ILLUSTRATION OF CONSOLIDATED STATEMENT OF COSTS AND
BENEFITS, IN TOTAL AND BY TIME PERIODS, FOR "X" IRRIGA-
TION PROJECT

(All figures in thousands of rupees)

Item	Total for 30 years 1952—81	1st 5 years 1952—56	2nd 5 years 1957—61	Next 10 years 1962—71	Final 10 years 1972—81
COSTS					
Land purchase	5,000	3,000	3,000		
Construction of—					
Irrigation works	7,500	2,500	3,500	1,500	
Roads	1,000	500	250	150	100
Houses and market towns	3,000	1,000	1,500	500	
Schools and hospitals	2,750	250	400	100	
Project administration and operation	9,000	1,500	2,500	3,000	2,000
School and hospital person- nel and expenses	1,250	100	150	450	550
Interest (5%)	14,140	1,140	3,000	6,500	3,500
Contingencies	3,220	720	1,000	1,000	500
Depreciation	2,275	375	500	700	700
Total Costs	47,135	11,085	14,800	13,900	7,350
BENEFITS					
<i>Direct</i>					
Payments on land purchase	20,500		1,500	9,000	10,000
Water charges	8,000		500	3,000	4,500
Betterment tax	6,000	1,000	2,000	3,000	
Interest from farmers	8,050	50	2,000	4,000	2,000
Loan repayments from farmers	3,000		500	1,500	1,000
<i>Indirect</i>					
Income taxes on farmers	1,500		200	500	800
" " on others	4,700	200	500	1,500	2,500
Profit taxes on business	3,500		500	1,250	1,750
Sales taxes	1,500	100	200	500	700
Other Government revenues	1,100	50	150	400	500
Total Benefits	57,850	1,400	8,050	24,650	23,750
Net excess of benefits over costs.	10,715	—9,685	—6,750	10,750	16,400
<i>Plus—Receipts from loans</i>	<i>25,000</i>	<i>14,000</i>	<i>11,000</i>		
<i>Minus—Repayments of principal.</i>	<i>25,000</i>		<i>5,000</i>	<i>10,000</i>	<i>10,000</i>
Net Excess of Receipts over Expenditures.	10,715	4,315	—750	750	6,400

(Calculations assume project covers 100,000 acres, bought at Rs. 50 per acre, and sold at Rs 200.)

PROJECT STATEMENT

COSTS AND BENEFITS SEPARATELY FOR EACH AUTHORITY INVOLVED

Here you show first for the project authority then for the local authority and then for the Central Government, its cost and benefits, both total and by time periods. Now at that point you will stop for an explanation and for a reconciliation, if any. In some cases you may have some governmental units for which the total cost of the project exceed the benefits. For example, the Central Government may feel it worth while to support some projects, even though the direct and indirect benefits to the Central Government for that project do not cover the costs. Well, if that is so, there must be some reason for it, some reason in national policy or in defence or something else and that should be shown. If, however, the creation of one project is likely to make it possible to create other projects as the building of a railroad for example is expected to make possible the development of manufacturing industries and agricultural and so on, you can make an attempt to estimate the value to the Central Government of that subsequent expansion, and that too might come in then as an indirect benefit rather than showing as a loss. If a project will increase the national income by a substantial amount, making productive work for people not otherwise employed or fully employed, the Central Government may feel it is to the nations advantage for it to subsidize that project enough to cover its costs, even though the Central Government will not recapture those expenditures in taxes or in any other direct way. That is, if the nation as a whole is ahead as a result of the project, it may pay to go ahead with it, even though the tax system is not such as to recapture for the Central Government what it puts into the project.

The total costs and benefits for the project over the whole period might be distributed between the different authorities, as shown in Table II on the following page

PROJECT STATEMENT

TABLE II
ILLUSTRATION OF PROJECT COSTS AND BENEFITS OVER ENTIRE
30-YEAR PERIOD—CONSOLIDATED AND BY AUTHORITIES

(All figures in thousands of rupees)

Item	Consoli- dated Total	Project Authority	Provincial Govern- ment	Central Govern- ment
COSTS				
Land Purchase	5,000	5,000		
Construction —				
Irrigation works	7,500		7,500	
Roads	1,000	1,000		
Houses and market towns	3,000	3,000		
Schools and hospitals	750		750	
Administration and operation	9,000	7,500	1,000	500
School and hospital personnel and expenses	1,250		1,250	
Interest (6%)	14,140	14,140		
Contingencies	3,220	2,420	600	200
Depreciation	2,275	1,950	250	75
<i>Grants</i>				
For irrigation	8,500			8,500
For roads	1,000			1,000
For schools and hospitals				2,000
Total Costs	58,635	35,010	11,350	12,275
BENEFITS				
<i>Direct</i>				
Payments on land purchase	20,500	20,500		
Water charges	8,000	8,000		
Betterment tax	6,000			6,000
Interest from farmers	8,050	8,050		
Loan repayments from farmers	3,000	3,000		
<i>Indirect</i>				
Income taxes—on farmers	1,500			1,500
On others	4,700			4,700
Profit taxes—on business	3,500			3,500
Sales taxes	1,500		1,500	
Other Government revenues	1,100		800	300
<i>Grants</i>				
For irrigation	8,500		8,500	
For roads	1,000	1,000		
For schools and hospitals			2,000	
Total Benefits	69,350	40,550	12,800	16,000
Net excess over costs	10,715	5,540		
<i>Plus—Receipts from loans</i>	<i>25,000</i>			
<i>Minus—Repayments of loans</i>	<i>25,000</i>			
Net excess of receipts over expenditures	10,715	5,540	1,450	3,725

PROJECT STATEMENT

The total of all benefits and receipts in Table II is larger than in Table I, because it includes the payments and receipts of grants between agencies which cancel out in the consolidated statement. The net excess, of course, remains the same.

The distribution of costs and benefits could then also be shown separately by each administrative agency, with a break-down of its expenditures and receipts by time periods. These would be quite simple for some agencies, such as the provincial and central government, but would be quite complicated for the project authority. The statement for the central government is shown in Table III.

TABLE III
ILLUSTRATION OF CENTRAL GOVERNMENT COSTS AND BENEFITS,
IN TOTAL AND BY TIME PERIODS, FOR "X" IRRIGATION PROJECT

(All figures are in thousands of rupees)

Item	Total 1952—81	1st 5 years 1952—56	2nd 5 years 1957—61	Next 10 years 1962—71	Next 10 years 1972—81
COSTS					
Administration and operation	600	50	150	150	150
Contingencies	200	50	125	25	..
Depreciation	75	5	15	25	30
<i>Grants</i>					
For irrigation	8,500	3,000	4,000	1,500	.
For roads	1,000	500	250	250	
For schools and hospitals	2,000	350	550	550	550
Total Costs	12,275	3,955	5,090	2,500	730
BENEFITS					
Betterment tax	6,000	1,000	2,000	3,000	..
Income taxes—					
On farmers	1,500		200	500	800
On others	4,700	200	500	1,500	2,500
Profit taxes—					
On business	3,500		500	1,250	1,750
Other Government revenues	300	20	30	110	140
Total Benefits	16,000	1,220	3,230	6,360	5,190
Net excess over costs	3,725	—2,735	—1,860	3,860	4,460

Tables similar to Table III should be shown also for each of the other administrative agencies involved (as the provincial government and development authority, in the illustration used). The totals of all items shown in the tables like Table III should add up, by time periods, to the corresponding figures in Table I for each time period, and by agencies, to the corresponding figures in Table II, excluding the grants which cancel out.

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Question—Would the Central Government ever contribute more costs than it got in benefits?

Answer—Well if some project were justified to the Central Government even though it would have to operate as though it had a loss, because of its defence value, the figure would have to show that the direct economic value the Central Government, meaning that the loss is being taken on government account as one of the costs of defence. And that is what I meant when I said explanation and reconciliation. If there is some point in which the relation between agencies are not clear, you should explain why it is desirable to do it, even if it does not pay its way. We are trying to show what a project means in terms of each of these authorities involved and that is it shows whether the financial obligations that you are setting out, are going to prove favourable in terms of the different units accepting financial obligations, or whether you are setting up a structure which is either going to break down later or which requires subsidies from some other side. It will also indicate whether the arrangements between the different governmental agencies involved are fair or not, because there may be some commitments which on such study prove not reasonable.

GENERAL CONCLUSIONS ON THE ECONOMIC FEASIBILITY OF THE PROJECT

Conclusions on the economic feasibility of the project as a whole take account of what estimates can be made of indirect benefits as well as the estimates for the direct benefits, indirect costs and indirect benefits both. The ultimate judgment has to be based on taking into account the indirect results of the project as well as the direct results, and so here in the final conclusion you have to bring them altogether.

When you try to appraise the financial aspects of this and try to forecast what it is going to mean, it means you are trying to work out now in advance some idea of the set of financial stages in each of the successive years of its beginning—what the financial position of the farmers, businessmen, merchants on the project will be in the years going forward—what the financial position of each of the agencies which has a hand in sharing in the costs and the benefits will be each year as you go forward. It is a big job. Now in this way you can lay out a technique and a procedure, by which you can take a look at them. There will be many parts of it that you can't look at fully, that you will have to put in some very rough figures. There will be many parts of the work you are doing now, that you will not have much basis for estimation. But this does give you a technique of showing, at least in some kind of numbers, the complexity in real life, the thing you are trying to forecast. When you say I am sure that this is going to pay, or I am sure that this is going to be profitable for the farmers on it, or I am sure it is going to work out well for the provincial government going forward with this, in making that statement out of blind faith, you think it is going to pay, but have you even made a calculation of how it is going to pay? This is merely a technique of presenting in some orderly way, the minimum elements involved in knowing whether the project will pay or not. On the

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direct side of the direct costs and the direct benefits, you already have from Mr. Lund's work very reasonable techniques for estimating what some of the direct figures are

On the side of the indirect costs, you are dealing with much more subjective values. In the case of some of them as in estimating these tax returns, there are definite basis on which you can estimate them. Some of those that I have suggested. On the other side in estimating some of the returns, what the value to the country will be in building in a railroad up there, opening up new territory—you are drawing on your imagination much more. Hardly any one could have said in 1860 in the U. S. what the effect would have been of building a railroad line across the continent to the Pacific Ocean, and yet people knew that there was unsettled territory and were anxious to open it up. So some of those things will perhaps have to be stated in exceedingly broad imaginative views, they will have to be put down in qualitative terms—that this will enable us to open up a valley in which it is estimated that so much millions or thousands of people can settle, and we estimate by settling in that region—5 or 2 million or 100 thousand people that are now unemployed, without any effective work to do, if we increase the number of people employed in our country effectively from 25 million to 26 million, then we estimate that these new million workers will add as much *per capita* to the income as the people already employed. That is your basis for estimating the increase in the national income. So there are ways by which you can draw up some rough estimates, even if you cannot work out every detail.

Such estimates in dealing with some of these projects will make it possible to justify projects, which could not be justified if viewed in the narrow context of what happened within the geographic limits of the project itself.

Question—Is it necessary to prepare such a detailed statement for an agricultural project or a mineral project or a marketing project?

Answer—Each of them have special technical problems, but you must remember that this is chapter 7 of the report. It has 6 other chapters in it, and in these other chapters we have already discussed various technical aspects of the project. As I pointed out in some of those technical aspects, the items to be considered and the way they would be appraised would be quite different in the case of an agricultural project or a mining project or an industrial project and in the case of fertilizer plants which Mr. Qureshi discussed the other day. He brought in some economic considerations quite different from any that I have already presented in detail. But what we are talking about here is not any of those technical elements for the appraisal of the soil, or the appraisal of the lay out of the plant or the appraisal of the flow of the water. We are talking here about Dollars and Pence or Rupees and Annas, about prospective costs and benefits. The costs and benefits are always measured in terms of monetary units. Now every project has costs and every project has benefits. The only way in which one project could vary from another, would be in terms of how many different types of either productive units on the one side or of governmental authorities on the other side were concerned with the project. If you had a project which was

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simply going to result in expanding agricultural production by creating a large number of farms, all of exactly the same type and all of the same size and all producing the same crops, you will need to have only one farm plan for all. If you have only a single type of farming to consider, and a single farm organization to work out prospective costs and benefits for, instead of several different ones, that would greatly simplify the appraisal of the farm organization side. Similarly if by legislative enactment or otherwise, you establish one authority in the area, to take the place of all other government agencies which would do all the financing collect all the revenues, and pay for all the services (including payments to other agencies for police, schools, etc.) you then might be able to reduce of all these different governmental authorities to a single unit. So it does not depend on whether it is an agricultural project or an industrial project. It depends on how complex is the administrative structure in the region and how complex is the distribution of benefits and the sharing in costs. There a lot of things that we could not understand in the Thal project. They were all there even though they were not shown. I am giving you here an orderly way to present what is there, so that if it is there, it will be shown so that anyone studying it will be quite clear what the arrangements are, and the authorities concerned will also be quite clear as to what the arrangements are. But if you are going to set up a financial plan and you want that financial plan to work as set out, you must determine ahead of time about what you are going to collect and when. And this scheme although complex is to its very complexity a way of reflecting what is really there, whether it has been worked out or not. You are going to be a lot surer that when the project does get going, it is more likely to work, because the necessary advance plans will have been made.

Mr. Vane:—The project may also be controlled by different units, which can also be considered as separate units. But if it is a combined project, then the whole chapter has to be included for each section or separate unit. If it is a big combined project including industry and agriculture, then each part has to be presented separately and then a general consolidation is to be made. On the other hand, if it is an engineering or an industrial project, it should show if there is any direct or indirect effect on the agricultural field.

Dr. Ezekiel:—Mr. Vane has put his finger on two points, which I see were left out of this rather hastily prepared outline. First, if the project itself involves a number of quite separable parts as a hydro electric plant and an irrigation system working from the same and perhaps the colonization of farms depending on the same water—a separate statement can be made for each of those separate projects. If you are dealing with such a combined project, you really should have a series of individual project statements of this sort, each involving all the chapters outlined and then a final statement of the consolidated costs and benefits from all the given parts of the multipurpose project. Next week Dr. Sain is going to be talking about valley development and multipurpose project development, some of which will illustrate some of these points.

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A second important point of Mr Vaner's is that when you do deal with combined resource development, you get within that combined project some of the multiplying effects on national economy and indirect benefits mentioned by Dr de Vries. If a nation is setting up a general development programme the combined benefits direct and indirect, are greater than the sum of the individual project benefits.

If you had in a river valley project with a hydro-electric plant showing benefits of 2 million rupees a year, irrigation works showing benefits of a million rupees, and a paper plant showing benefits of a million rupees, the economic effect of adding 2 plus one plus one, is not four, it may be six or eight. When you have all three things happening at the same time, each intensifies the other. A community of industrial workers in the hydro-electric plant and the paper factory, would make more people employed in the region. There will be greater demand for food in the region. Some of the farmers would produce fruits and vegetables, milk and eggs to be sold to these industrial employees. Farmers will be getting more farm income than would be calculated looking at the farms alone. Similarly the growth of industries in the region would make more demand for electric power, the paper plant would enlarge markets for forest products. The more good projects you have together in a plan, the more productive they all are. How far you can go in estimating these benefits is difficult. The indirect benefits become greater the more things you take into your plan. In a project statement which includes combined development of a number of different sub-projects within it, your calculations for the indirect benefits of the combined plan become even more important than for each single project. And likewise the possibility of the combined project paying its way, becomes correspondingly greater.

VIII Summary Statement of all aspects of the Project

Chapter VIII is a summary statement of all aspects of the project, both the administrative and financial considerations. I have really already talked about this at the beginning. The final summary which I call chapter 8 here, would really be the first statement in presenting the project. It would include a very brief statement of the findings, in simple non-technical language. Each one of the statements there would be annotated by a reference to a chapter. Chapter I might be Exhibit I and Chapter II might be Exhibit II and so on. The exhibits would give the fuller evidence to support the summary. To be most effective I believe the whole summary should run not over 10—20 typed pages, to be brief enough. So then an administrative office, a Joint Secretary, or the head of a bank mission, can read the whole thing through and get an overall view of the thing as a whole. One way to help simplifying is to use effective headings, have it broken up into small sections with an effective heading for each of them. You can start off each paragraph by one sentence indicating what the paragraph is about. So that anyone as soon as he starts on each paragraph knows what they are getting into. That is one of the ways of a good subject presentation—say what the point is and then explain it.

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Some people argue that a summary always has to be at the end of a report that it is no use showing a summary until you present what is before it. But if it is 500 pages before you get to the summary, many people may never find it. But if they start with the summary and say this looks like an interesting idea, or this sounds like a workable project, then there is encouragement to go ahead. Further they may be convinced from your summary, if you have done a fair analysis and know what you are talking about. And your summary should be followed by a good table of contents, so that they can readily find anything they want to know, any given details or any part of the whole statement.

APPENDIX

GENERAL OUTLINE FOR A PROJECT STATEMENT

- I Review of resources available and their development proposed, with maps
- II Statement of Engineering or other physical aspects of the proposed development, with blue-prints and estimates of costs involved, total and by time periods
- III Technical and economic appraisal (agricultural, industrial, etc), of the prospective physical productivity and prospective income of the proposed development, of technical problems involved in utilizing its resources, and of prospective speed of development, and of markets for the products
- IV Proposed administrative arrangements for conducting the development
- V Proposed arrangements for financing the project
- VI Relation of the project to the national economic and the national development programme
- VII Appraisal of prospective costs and benefits, direct and indirect, both in total and by time periods
- VIII Summary statement of all aspects of the project, for administrative and financial consideration

DETAILED OUTLINE FOR A PROJECT STATEMENT

I Review of Resources available and their Development Proposed

- 1 Location and character of the proposed project (country map and project map)
- 2 Relevant physical and natural resources (soils, geology, topography, water supplies, simple river flows, underground waters, drainage, flood records, etc), climate, flora, etc , mineral deposits for mining or chemical project , accessibility of raw materials (for industries)
- 3 Relevant social features involved (present utilization of the area and its resources, population, skills, agriculture, transportation, schools, communications, power, accessibility to markets), public services, schools, hospitals, water supply
- 4 Present state of development activities in the area
- 5 Existing governmental and administrative authorities in the area
- 6 General outline of the proposed new development in the region

II Engineering and other Physical Aspects of the Proposed Development

- 1 Maps and detailed blue-prints and plans of various features of construction, equipment, etc
- 2 General specifications for construction and equipment.

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3 Explanation of relation of proposed structures and equipment to the resources available and job to be done (dynamos, embankment, etc), minerals of justification and proof of the calculations, and to alternative methods of construction

4 Projected speed and time schedule of construction and installation of facilities for various phases of construction, with time schedule of initiation and completion

5 Estimates of costs involved, overall and by time periods, for various sectors of the project (especially those the responsibility of different authorities)—

- (a) Assumptions as to changes in costs, if any, during period of construction
- (b) Comparison of costs per unit with experience in comparable projects elsewhere
- (c) Costs of items to be—
 - (i) domestically supplied
 - (ii) of imported goods and services

III Technical and Economic Appraisal of Physical Productivity and Prospective Income of the Proposed Development, and of Markets for the Products

1 For agricultural developments—

- (a) Appraisal of productive value of the increased resources—
 - (i) Resources available Experimental evidence on increased production on the several types of soils present from water, drainage etc
 - (ii) Evidence on the probable increased production Experience in the area or in similar areas with average yields of various products and with products found suitable
 - (iii) Evidence on farm organization—for size of farms projected, and kind of crop rotation, what will be home consumed and sold, and what will be incomes and expenses of individual farmers (involves forecasts or assumption on future markets and prices)
 - (iv) Speed of settlement and development How rapidly are the agricultural areas likely to be settled, and how long will it take farmers to reach full production, in view of the aid to be given them, the problems in the area, and past experience with speed of development in other projects ?
 - (v) Dealing with special problems What evidence is available as to the best means of dealing with special agricultural problems in the area, such as sand dunes, high winds, or excessively light or heavy soils, or soils devoid of organic matter

2 For industrial development—

- (i) Expected products What product can reasonably be expected from the materials resources and labor available and from the equipment to be installed? What are bottle-necks to production?
- (ii) Speed of completion How rapidly is the plant likely to be completed, and how to reach full production in the light of experience with parallel industrial in other regions?
- (iii) Expected quantities of products If the plant will handle or process agricultural products from the region, how much of such products are likely to be available for its use within 5, 10, and 15 years of the time the plant is completed in view of experience in speed of establishing production of such products in other regions (sugar-cane, fruit for canning, cotton, etc.)
- (iv) (a) What special technical problems exists in the region, affecting the operation of the given plant?
 Temperatures, relative humidity, etc., for manufacturing plants
 Suitability of water supply amount and composition.
 Suitability of specific areas or other raw materials available
 (b) How will these difficulties be met?

3 Prospective market What are prospective markets for the products? If domestic, how large a quantity can be sold without exceeding domestic requirements? What will transportation and selling costs run? What prices may be expected for the products at the factory, and for how much?

4 Prospective resulting output from the new development, in the light of the technical appraisal of possibilities and ways of meeting them, both eventually and at successive time periods

IV Proposed Administrative Arrangement for Conducting the Development

1 Proposed organization and responsibility for planning, construction and operation

2 Proposed division of responsibility and powers between agencies Division of responsibility and powers between local, provincial and national authorities and special project authority, if any—

- (a) Administrative powers,
- (b) Financial powers and responsibilities,
- (c) Legal basis pay and structure of any new or special project authority

PROJECT STATEMENT

3. Proposed Relations between the project (or other local) authority and the individual farmers, settlers, businessmen or others involved in carrying the project through, present land ownership, changes needed in land ownership and methods of securing them

4 Proposed arrangements for supervising construction

5 Proposed arrangements for operation and maintenance—

- (a) Recruitment and training of staff
- (b) Maintaining efficiency of operations
- (c) Plan for colonization or settlement
- (d) Supervision of agricultural or other productive operations
- (e) Provisions for educational, health, technical training, and other necessary services to workers, farmers, operatives or others on the project
- (f) Provisions for supplying credit to farmers, settlers or others and for supervision of the use of the credit
- (g) Provisions for marketing and transportation.

V Proposed Arrangements for Financing the Development

1 Division of financial responsibility between different authorities concerned—amounts of capital to be supplied by each and from what sources and at what time or times

2 Capital to be supplied from current income and capital to be borrowed—For each—amount to be supplied—

- (a) in domestic currency,
- (b) in foreign exchange—
 - (i) dollars or equivalent,
 - (ii) other currencies,

with time schedule for each.

3. (a) Proposed method of repayment of borrowed capital with amortization or sinking=fund programme

- (i) for domestic currency,
- (ii) for foreign exchange

- (b) Proposed interest rates to be paid
- (c) Time schedule of advances

4 Proposed sources for the credit needed—

- (a) domestic funds,
- (b) foreign funds

VI Relation of the Project to the National Economy and the National Development Programme

1. Consistency with the national development programme Relations with other projects or programmes and effect in stimulating or assisting related or subsidiary industries

PROJECT STATEMENT

2. Relations to the National Economy—

(a) Prospective indirect benefits to the national economy resulting from the project—

- (i) Direct and indirect increases in productive employment
- (ii) Increased production and national income
- (iii) Increased trade, domestic and international
- (iv) Increased tax and other revenues—Which authorities will receive them ?

Estimated value of such indirect benefits

(b) Prospective effect of the project on nations balance of international payments—

- (i) The effects on imports: reducing imports, dollar and other
- (ii) The effects on exports: increasing exports, dollar and other
- (iii) Other effects: tourist expenditures, transportation charges, etc

3 Adequacy of the financing plan for the project in the light of the projected future balance of payments

VII Appraisal of prospective costs and benefits, direct and indirect, both in total and by time period

1 Summary of ability of productive units (farmers or businessmen) to pay the taxes, water charges, and other returns assumed in the benefit statement (farms, business enterprises, etc)

2 Overall consolidated costs and benefits of all governmental (or other project) units involved, total and by time periods.

- (i) Benefits including direct and indirect benefits
- (ii) Costs including interest charges on borrowed funds
- (iii) Ratio of costs to benefits, overall and by time periods

3 Costs and benefits separately for each authority involved

- | | |
|------------------------------------|----------------------------------|
| (i) Project authority, if any | } Each total and by time periods |
| (ii) Local authority (if involved) | |
| (iii) Province | |
| (iv) Central Government | |

Explanation and reconciliation, if any one shows costs in excess of benefits

4 General conclusions on economic feasibility of the project

VIII Summary Statement of all Aspects of the Project, for Administrative and Financial Consideration

Brief condensed summary of Chapters I to VII, and of principal findings (with appropriate references), in relatively simple non-technical language preferably not over 10—20 typed pages. Use effective headings and topical sentences. Make only limited use of maps and pictures.